RESPONSE TO CITY OF ROCHESTER VIOLATION NOTICE (JUNE 6, 2023)

FOR

ROCHESTER TOWERS

ROCHESTER, MINNESOTA

Prepared for:
Rochester Towers Homeowners Association
207 5th Ave SW
Rochester, Minnesota 55902

Prepared by:
Encompass, Inc.
5435 Feltl Road
Minnetonka, MN 55343

Project # 23-7691-002

June 29, 2023

STANDARD OF CARE

This letter is prepared based on observations and review of the material available as of this date. The conclusions and recommendations contained herein represent our professional opinions. These opinions were arrived at in accordance with accepted engineering practices at this time and location. We reserve the right to revise or delete any opinions based on the availability of additional data.

The services performed by Encompass, Inc. were conducted in a manner consistent with the level of skill and care ordinarily exercised by members of the profession that are currently practicing in this area and under similar fee, scope, and schedule requirements.

No other warranty is implied or intended. Should you have any questions, please call.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature: 

Date: June 29, 2023 Registration Number: 46625

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June 29, 2023

Jerry Norman
Manager – Plan Review and Permit Services
4001 West River Parkway NW
Rochester, MN 55901
jnorman@rochestermn.gov

Re: Rochester Towers – City of Rochester Violation Notice (June 6, 2023)
207 5th Avenue SW
Rochester, MN 55902
Encompass Project No.: 23-7691-002

Dear Mr. Norman:

At your request, we have prepared a summary letter in response to the City of Rochester Violation Notice dated June 6, 2023 (See Appendix A). The following response letter is intended to provide:

- Identification of Structural Instability: A general description of the identification of the structural instability witnessed on June 2, 2023 at the Rochester Towers building.
- Column Stabilization & Shoring: A description of the column stabilization and shoring that has been installed following the discovery.
- Expanded Inspection of Exposed Concrete Elements: A summary of the subsequent expanded investigation of the exposed structural concrete elements and methods to identify potential concrete damages.
- Conclusions and Recommendations for Priority Repairs: Identification of locations of priority structural repairs recommended for rehabilitation of the exposed concrete elements.
- Supplement Comments for Proposed Occupancy: Supplemental comments on the current status of the building as it relates to proposed occupancy.

The following response is provided:

1.0 Introduction

1.1. The Rochester Towers is located at 207 5th Ave SW in Rochester, MN.

1.2. The Rochester Towers is a multi-family condominium building with 90 residential units (homes) that are privately owned (Association).

1.3. The building consists of underground parking, parking and community spaces on the main-level, residential homes on floors 1 through 12, and two stories of mechanical equipment mezzanines on the 13th and 14th floors.

1.4. Original structural drawings were reviewed as part of the analysis represented herein. Original structural drawings were prepared by James G. Morris Consulting Engineers in approximately 1965.

1.5. Original structural drawings indicate that the building's structural system is comprised of monolithic reinforced concrete beams, columns, and floor slabs. The elevator and stairwells are constructed as reinforced concrete walls and are also poured monolithically with the structural system.

1.6. At the perimeter of the building structural elements are exposed. In general, these exposed components consist of perimeter columns and spandrel beams at the 2nd Floor, 12th Floor, and 13th Floor (roof eave line/mezzanine floor). Exposed concrete structural elements are generally identifiable by being painted a light sand color.

1.7. Previous Encompass activities at the building consisted of evaluating leakage at penthouse windows and providing a report regarding the building window issues to the Association on February 9, 2021.

2.0 Identification of Structural Instability

2.1. <u>2022-2023 Sealant Maintenance Project</u>

2.1.1. In the Fall of 2022, an exterior sealant maintenance project commenced at the building. The Association contracted with Building Restoration Corporation (BRC) to perform sealant replacement.

2.1.2. The scope of the sealant replacement project consisted of removing and replacing perimeter sealant joints at windows and included the replacement of sealant joints between window assemblies and exposed structural concrete elements (columns and beams). The original scope of work only included sealant replacement; concrete repair was not included.

2.1.3. Encompass was retained by the Association in 2022, to provide periodic observations of the sealant application as part of the sealant maintenance project being performed by BRC.

2.1.4. Due to exterior temperatures and weather conditions, work was paused during the winter months and resumed in the Spring of 2023.

2.1.5. At the time that work resumed in 2023, BRC resumed sealant replacement on the south elevation and between grid lines 7 & 8 on the east and west elevations.

Note: Column references are made throughout this report and correlate with the intersections of construction grid lines used during original construction. Grid Line "B" is the west elevation of the building and Grid Line "E" is the east elevation of the building. Grid Line "2" is the north elevation of the building and Grid Line "9" is the south elevation of the building. See Appendix B for grid line designations of original elevation drawings.

2.1.6. In May (2023), during the sealant replacement work, it is our understanding that the installer performing the sealant replacement discovered, what was believed at that time by BRC to be, localized concrete deterioration at exposed concrete columns that was proximate to the sealant work that had recently been initiated.

2.1.7. BRC was in the process of performing concrete maintenance on concrete columns the week of May 29, 2023 and subsequently discovered extensive concrete deterioration at the first repair location. BRC notified the Owner and Encompass and the need for structural concrete repairs was identified.

2.2. <u>Observation on June 2, 2023</u>

2.2.1. On the morning of June 2, 2023, BRC contacted Encompass and stated that they believed that the repair location on the 2nd floor of a column on the west elevation had moved (the affected column is Column B-8 on the west elevation; See Appendix B for grid line designations on original elevation drawings).

2.2.2. Encompass conducted a site visit at approximately 1:00 PM and inspected the concrete column. Upon initial discovery of movement, prior to Encompass arrival, BRC removed the interior drywall along the column location for inspection. Removal of the interior drywall revealed that concrete cracking and deterioration extended inward into the column, indicating substantial concrete section loss. Encompass confirmed that column reinforcement movement occurred, as evidenced by bowing of the exposed vertical

reinforcement, failure of corroded horizontal ties, and crack propagation in the concrete column that was previously concealed by windows and wall framing.

2.2.3. Encompass calculated the estimated load on the remaining cross section of the column based on the observed deterioration of the concrete and loss of effective reinforcement. It was determined that the remaining concrete section was overstressed. It was at that time that Encompass assessed the condition of Column B-8 as being unstable and reported to the Association that it presented a life safety concern.

2.2.4. This information was verbally communicated to City of Rochester personnel on site and the condition was deemed unsafe with an order issued in accordance with Section 1300.0180 of the 2020 Minnesota Building Code. (Note: This order was formally issued in a letter from the City dated June 6th.) See Appendix A for Violation Notice dated June 6, 2023 prepared by the City of Rochester Building Official.

2.2.5. Concurrent with column stabilization and shoring installation at the west column (Column B-8), the column on the east elevation, Column E-8, was evaluated. It was determined that Column E-8 exhibited similar reinforcement configuration, corrosion of reinforcement, and spalling patterns. However, in contrast to the west column, analysis concluded that the estimated remaining concrete section capacity of Column E-8, with additional exterior confinement, had not yet been exceeded. It was determined that external confinement would provide stability until rehabilitation can be performed.

2.2.6. Removal of the windows adjacent to Column E-8 confirmed these conditions at the 2nd and 3rd floors and column stabilization (external confinement steel) was installed at this column following stabilization of Column B-8. See Column Stabilization and Shoring section for additional information.

2.3. <u>Authorization to Proceed with Evacuation and Shoring (June 2, 2023)</u>

2.3.1. Concurrent with notification to the City of Rochester (of the discovered structural concern), the Association, with assistance from the property manager, directed the occupants to vacate the property and authorized the installation of emergency shoring and column stabilization.

2.3.2. Evacuation of the building was successfully and safely completed by approximately 7:30 PM the evening of June 2, 2023.

2.3.3. Shoring and column stabilization of the west column (Column B-8) and the east column (Column E-8) were completed at approximately 3:30am the morning of June 3, 2023.

2.3.4. Additional shoring was installed at the structural concrete slab/ramp at the vehicular entrance of the parking garage on the Main Level based on the discovery of pre-existing damages at the slab/ramp. Shoring of the drive lane slab was completed by approximately 5:30pm on June 3, 2023. See the following section for description of shoring at the concrete slab/ramp.

3.0 Column Stabilization & Shoring

3.1. West Column, Column B-8

3.1.1. External column confinement (confinement) and shoring was installed to stabilize the column at the 2nd floor.

3.1.1.1. Column confinement installation generally consists of a series of temporary steel plate and threaded rod assemblies placed on all sides of the concrete column to laterally restrain the sides of the concrete column. Column confinement is currently installed on the 2nd floor of Column B-8 and will remain in place until structural repairs can be performed.

3.1.1.2. As part of confinement installation at the 2nd floor, the windows adjacent to the column were removed to expose all sides of the concrete column. See Appendix G for a general summary of column confinement and shoring conditions by unit/home.

3.1.2. Shoring posts were installed around Column B-8 to reduce loads on the deteriorated column.

3.1.2.1. Shoring installation generally consists of a series of manufactured, load-rated steel posts. These posts are installed to reduce the load on the deteriorated portion of the column and redistribute loads around the 2nd floor column (redirect load path) down to the foundation level of the structure. Shoring for Column B-8 has been installed from the lower parking garage up through the 7th Floor and will remain in place until structural repairs can be performed.

3.1.2.2. As part of the installation of shoring, the interiors of homes required the removal of heating coils below adjacent windows and localized removal of interior wall framing (including drywall) to expose the sides of the column and the adjacent concrete beams.

Where needed, flooring finishes were also partially removed to expose the concrete slab for shoring blocks. See Appendix G for general summary of column confinement and shoring conditions by unit/home.

3.2. East Column, Column E-8

3.2.1. External column confinement (confinement) was installed to stabilize the column at the 2nd and 3rd floors.

3.2.1.1. Column confinement installation generally consists of a series of temporary steel plate and threaded rod configuration(s) placed on all sides of the concrete column to laterally restrain the sides of the concrete column. Column confinement is currently installed on the 2nd and 3rd floors of Column E-8 and will remain in place until structural repairs can be performed.

3.2.1.2. As part of external confinement installation at the 2nd and 3rd floors, the windows adjacent to the column were removed to expose all sides of the concrete column. See Appendix G for general summary of column confinement and shoring conditions by unit/home.

3.2.2. Shoring and redistribution of column loads are not required for stabilization of Column E-8 at this time; however, shoring will be required for structural repairs during rehabilitation.

3.2.2.1. Shoring for the Column E-8 column is currently partially installed within the lower parking garage and at the main level parking garage. This shoring coincides with the placement of concrete slab/ramp shoring at the main-level garage. See the following section for additional information for slab/ramp shoring at the parking garage entrance.

3.2.2.2. As part of rehabilitation of Column E-8 the interiors of homes will require further interior preparation for the installation of shoring. It is likely that the shoring pattern will be similar to that of west column (Column B-8). Portions of Column E-8 were partially prepared as part of the field verifications on the column the evening of June 2, 2023 and for performing the expanded investigation in the days following. See Appendix G for general summary of column confinement and shoring conditions by unit/home.

3.3. Slab Shoring at Main Level Parking Garage

3.3.1. During shoring installation, the evening of June 2nd, significant concrete deterioration was discovered on the bottom surface of the vehicle ramp that leads to the main-level (upper) parking garage.

3.3.2. The damage consists of concrete spalling and through-slab cracking at approximately half of the ramp width, along the exit lane.

3.3.3. Exposed and corroded reinforcing steel is present and visible at the underside of the structural slab. On June 3rd, shoring was installed under the structural slab (ramp) and half of the ramp was closed from operation during the shoring effort.

3.3.4. Shoring for the parking garage ramp was coordinated with the slab and (future) shoring of Column E-8 to allow for continued manual operation of the overhead garage door (to the Main Level Parking Garage) during rehabilitation. Concrete barriers have been placed in front of the drive lane to prohibit vehicular access.

3.3.5. Shoring generally consists of a series of manufactured, load-rated steel posts and blocking to shim the posts tight to the underside of the structural slab/ramp. These posts are installed to support the slab and distribute loads down to concrete slab-on-grade below the ramp.

4.0 Expanded Inspection of Exposed Concrete Elements

4.1. June 2nd & 3rd - Column Inspections and Preliminary Findings

4.1.1. The concrete deterioration and reinforcement damages witnessed on June 2, 2023 were at two perimeter, exposed columns and at the vehicle/ramp entrance to the main-level parking garage.

4.1.2. Corrosion of concrete reinforcement is indicative of prolonged exposure of reinforcement to moisture. Over time, corrosion of concrete reinforcement results in expansive forces within concrete that results in concrete cracks and spalls (at corroded reinforcement).

4.1.3. Corrosion of column reinforcement coincides with exposure along the exterior face of the building facade. Original structural drawings (1965) indicate that installation of column reinforcement was to maintain a minimum 1.5-inch concrete coverage.

4.1.3.1. The corroded reinforcement installed at the 2nd floor of Column B-8 was estimated to have limited concrete coverage of approximately 0.5 inches. The concrete coverage provided at this reinforcement location was comprised of a concrete patch.

4.1.4. The extent of patch material and spalled concrete occurring through the column core (behind patch material) was confirmed during shoring installation on June 2, 2023, at Column B-8. A patch material was also confirmed to be present at concrete deterioration at Column E-8. The presence of a patch material at each location is evident by the varying material color and aggregate size.

4.1.5. There were no visible indicators of concrete degradation on the interior portions of the columns and beams as they are typically covered with interior finishes. Removal of windows and interior drywall was necessary on June 2nd to identify the extent of (exterior) spall and crack propagation at Column B-8 and Column E-8.

4.1.6. Based on these preliminary findings during column stabilization and shoring installation, inspection of other exposed structural concrete components was performed. This expanded investigation was performed at all exposed concrete components at the 1st floor up to the exposed concrete beam along the roof eave (13th floor). See the following section for expanded inspection of exposed concrete elements.

4.2. <u>June 3rd through June 19th Inspections</u>

4.2.1. Investigative work was conducted by Encompass between June 3, 2023 and June 19, 2023. The Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures and Commentary (ACI 562-19) was utilized as the general basis for performing the investigation.

4.2.2. The investigations were focused on identifying the extent of damage at Column B-8 and Column E-8, in addition to identifying other locations of structural damage at exposed concrete structural elements that present immediate repair needs. The investigations were performed by engineers licensed in the state of Minnesota.

4.2.3. The following general inspections were performed for the structural condition assessment of exposed concrete elements:

4.2.3.1. *Spall Identification*: Hammer-sounding exterior concrete columns was conducted at all exposed columns on Floors 1 thru 12. Locations of suspected concrete damage were marked on the building.

4.2.3.2. *Reinforcement Layout and Concrete Coverage Identification*: Ground-penetrating Radar scanning (GPR) was conducted in areas of suspected concrete damage that were identified by hammer-sounding. GPR was used to locate vertical reinforcement and ties, and identify concrete cover over reinforcement.

4.2.3.3. *Partial Patch and Spall Deconstruction*: Invasive openings were made in areas of suspected concrete damage identified by the hammer-sounding. Invasive openings were made to view conditions of concrete and reinforcement behind loose concrete.

4.2.3.4. *Localized Subsurface Deficiency Testing (Non-destructive)*: Ultrasonic testing (UT) was performed in areas of suspected concrete damage, and in non-damaged areas. UT was used to determine sub-surface deficiencies in the concrete.

4.2.3.5. *Concrete Strength Testing (In-Place)*: Windsor Probe testing was performed to evaluate the existing compressive strength of the perimeter concrete columns.

4.2.4. Spall Identification

4.2.4.1. Hammer-sounding of exposed concrete elements was performed by Encompass.

4.2.4.2. All four elevations of the building were accessed to hammer-sound the exposed (exterior) concrete elements. Access was gained by swing-stage and high-lift. The hammer-sounding was conducted to identify areas of potentially significant concrete deterioration of exposed concrete columns and beams.

4.2.4.3. Identification of suspected concrete damages on the elevation views is a visual representation and is limited to locations identified during hammer-sounding. Diagrammatic representation included does not imply severity of the deficient condition. See Appendix B

for elevation views showing areas of suspected concrete spalls and patch delamination.

4.2.5. Reinforcement Layout and Concrete Coverage

4.2.5.1. Ground Penetrating Radar (GPR) was performed by American Engineering and Testing (AET).

4.2.5.2. GPR testing was performed to identify vertical reinforcement location, tie locations, and concrete cover.

4.2.5.3. GPR testing was performed at (19) nineteen locations that were identified during hammer-sounding and generally consisted of locations where spalls appeared to be larger and/or coincided with previous patch locations.

4.2.5.4. Vertical reinforcement and ties were located at all tested concrete columns. Location and concrete coverage were reported on physical markings on the exterior face of the component at the inspection location.

- In general, column reinforcement layout appears to be consistent with the original structural drawings (1965).

- Concrete coverage measurements typically varied from 1-1/2” to 2”, though some outliers with greater coverage are present. Comparatively, the concrete cover at Column B-8 at the 2nd floor where significant reinforcement corrosion and concrete deterioration occurred was observed to be approximately 1/2”.

- Ties were typically located along concrete columns and appear to be at 12” on center. This appears to generally be consistent with the original structural reinforcement details.

4.2.5.5. Stirrups of long-spanning exposed beams are typically appear to be 7” on center. This appears to generally be consistent with the original structural reinforcement details.

4.2.5.6. See Appendix C for elevation views showing areas of GPR testing.

4.2.6. Partial Patch and Spall Deconstruction

4.2.6.1. Invasive openings were performed by BRC.

4.2.6.2. Invasive openings were made at (13) thirteen locations to inspect the condition of the spall and assess the condition of confining steel and vertical reinforcement as well as to verify the condition of the original concrete in the confinement area (the core) at a given location. See Appendix D for invasive opening location on Column E-5.

4.2.6.3. The invasive openings verified that the GPR measured cover over the existing reinforcement to be generally accurate.

4.2.6.4. Invasive openings were performed only in areas of spalled concrete, undamaged concrete surrounding spalled locations was not removed.

4.2.6.5. In general, most invasive openings revealed three type of concrete damage:

- Delamination of shallow concrete patching (parge coating) material from the concrete column surface, but no deterioration of underlying concrete.
- De-bonding of previously installed concrete patch material.
- Spall of original concrete adjacent to a previous concrete patch.

4.2.6.6. The installation of concrete patch material appears to be pervasive throughout the exposed concrete. Various cementitious patch materials were found, identifiable by varying color and aggregate, which indicates multiple generations of patching. In some locations, multiple patch material layers were found, indicating patching has been performed repeatedly over the history of the building. Patch material varied in terms of soundness and extent of delamination from underlying original concrete.

- A large patch spall was identified at Column E-5 at the 1st floor during hammer sounding. An invasive opening at the spall at the north side of the column corner exposed a reinforcement anomaly with the placement of the vertical reinforcement having an approximate concrete coverage of 3-inches.

4.2.6.7. There were no invasive opening locations that revealed patch material extending inward of the confinement cage (core) of the

column, with the exception of the discovery at Column B-8. During invasive openings, original concrete was sounded after loose patch material was removed to assess the underlying original concrete.

4.2.6.8. Partial deconstruction indicated that delamination of the shallow concrete patch material (parge coat) was likely the most common issue discovered by hammer sounding.

4.2.6.9. Reinforcement was inspected at each invasive opening when exposed. The vertical and tie reinforcement along the exposed face of the column was found to be surface corroded at nearly all locations. In general, the most severely corroded steel was found behind areas of previous patching. The ties and vertical reinforcement observed during invasive openings through concrete appears to be in general conformance with original design drawings prepared in 1965.

4.2.6.10. See Appendix D for elevations showing locations of partial deconstruction (invasive openings).

4.2.7. Localized Sub-Surface Deficiency Testing (Non-Destructive)

4.2.7.1. Ultrasonic testing was performed by American Engineering Testing (AET).

4.2.7.2. Based on observations made during invasive openings, several locations were selected for ultrasonic testing based on concerns of deterioration (cracking or spalling) potentially extending deeper in the column section.

4.2.7.3. Ultrasonic testing was conducted at Column E-8 and Column B-8 and four other columns identified as locations with potentially deeper damage within the column. In addition, approximately six additional locations were tested as control locations (where no damage was observed via previous testing methods).

4.2.7.4. Ultrasonic testing confirmed an additional reinforcement anomaly at Column E-5 at the 1st floor (Ref. Section 4.2.5.6). The reinforcement at this south side of Column E-5 has concrete cover of approximately 4 inches.

- Excessive concrete coverage of the two corner (vertical) rebar detected during invasive opening and Ultrasonic testing at Column E-5 is indicative of a reduced concrete core size.

- The placement/configuration of vertical reinforcement does not match the original construction drawings for this column location. It is likely that this deficiency occurred at the time of original construction.

- Cracks and spalling of the concrete along the exposed face of the concrete column is indicative of prolonged exposure to moisture.

4.2.7.5. No other areas were identified through scanning to have potential concrete damage within the cage of the columns.

4.2.7.6. See Appendix E for AET's Ultrasonic testing report.

4.2.8. Concrete Strength Testing (In-Place)

4.2.8.1. Windsor Probe testing was performed by American Engineering Testing (AET).

4.2.8.2. Results of the testing revealed the concrete strength at tested locations exceeds the compressive strength required by the building's original structural design.

4.2.8.3. See Appendix H for AET's Windsor Probe testing report.

5.0 Conclusions and Recommendations for Priority Repairs

5.1. It is recommended that priority structural repairs be performed at Column B-8 and Column E-8. The condition of these two columns differ in severity and degree of instability; however, the need for structural repair is similar.

5.1.1. In general, the deterioration of the concrete at Column B-8 and Column E-8 is consistent with damages that occurred over a prolonged period of time due to exposure of the reinforcement to moisture, subsequent degradation of reinforcement (vertical rebar and horizontal ties), and deterioration of concrete and patch materials.

5.1.2. The deterioration of the reinforcement and degradation of the concrete core reduces the capacity of the concrete column. It is recommended that shoring be installed during repair (or remain in place where currently installed until repairs can be performed).

5.2. The expanded investigation also identified an anomaly of the original installation of the vertical steel reinforcement of Column E-5 (1st floor) that is indicative of an

original construction defect. It is recommended that priority structural repairs be performed at Column E-5 (1st floor). The following analysis is provided:

5.2.1. Excessive concrete coverage of the two corner (vertical) rebar detected during invasive opening and Ultrasonic testing at this column is indicative of a reduced concrete core size.

5.2.2. The as-built installation of the reinforcement within the column does not match the design intent represented within the original structural drawings and details (1965).

5.2.3. Concrete spalling is occurring at a previous patch location at the deficiency and is indicative that previous patching attempts have exceeded their maintainable life cycle and the column is susceptible to becoming overstressed. If left unrepaired and conditions worsen, the column is likely to become unstable.

5.3. The concrete slab/ramp entrance to the main-level garage is exhibiting signs of corroded reinforcement, spalling concrete, and through-slab cracking. It appears that the serviceability of the slab under vehicular loading is nearing the end of its serviceable life-expectancy and repair/replacement is recommended.

5.4. In our professional opinion and based on the current information, the building structure in its current condition, with shoring and reinforcement measures that have been implemented to support Column B-8, Column E-8, and the ramp entrance slab is safe. In an effort to achieve re-occupancy, we request that the City consider our conclusion that the building is currently safe, and consider removing the “Unsafe Building” designation attributed to the building by the City of Rochester on June 6, 2023.

5.5. It is our recommendation that the Owner perform priority repairs in a timely manner. The existing shoring and concrete stabilization installation is temporary only. The shoring and concrete stabilization will require periodic re-inspection by an engineer or the shoring contractor every 120 days at minimum; however, while work is occurring in areas where shoring is present, the repair contractor’s means and methods will need to include or permit more frequent inspections. The equipment in place was last inspected by the shoring contractor on June 29, 2023 (the date of this response letter).

6.0 Supplement Comments for Proposed Occupancy

6.1. It is our recommendation that shoring within the parking garage be protected from vehicular and pedestrian traffic during all phases of rehabilitation. Restricted or prohibited access may be required at various phases of repairs; however, vehicular

access to the main-level parking garage will likely be prohibited throughout the duration of repairs at Column B-8, Column E-8, and entry ramp/slab due to proximity of shoring to primary drive lanes and entrance.

6.2. It is our recommendation that units/homes with shoring currently within them remain vacated while shoring is present within the home. Similarly, units/homes with windows currently removed are recommended to remain vacated until window(s) are reinstalled or fall protection and temporary barrier suitable for restricting access to the vacated window can be (temporarily) installed.

6.2.1. During the repair process within individual unit/homes it is our recommendation that access to shoring be prohibited to residents and that occupancy be provided on a temporary basis once repairs are completed and shoring is removed from a home/unit. Temporary occupancy can likely be facilitated by the rehabilitation contractor as needed to accommodate product lead times and repair procedures and schedule. Reinstatement of full occupancy can be considered upon completion of priority repairs and inspections.

6.3. For reference, the current conditions are present (See Appendix G for additional information):

6.3.1. Shoring is present within the lower parking garage and main level parking garage below Column B-8 and Column E-8. Shoring is also present within the mechanical room below the slab/ramp entry for the main-level garage.

6.3.2. Current Homes with Shoring/Confinement (Column B-8): 103, 204, 304, 404, 504, 604, and 704.

6.3.3. Current Homes with Confinement (Column E-8): 205 and 305.

6.3.4. Windows are currently removed from Homes: 204, 205, and 305.

6.4. Additional shoring and confinement, along with window/door removal, will be required during structural repairs to Column B-8 (2nd Floor), Column E-8 (2nd and 3rd Floor), and Column E-5 (1st Floor). The means and methods of construction will necessitate work sequences and schedules that have not been defined at this time; however, access and occupancy limitations can be coordinated by the rehabilitation contractor and Owner at the time of permitting.

6.5. It is our opinion that living units where shoring is not present can be re-occupied following fulfillment of applicable city and state requirements, yet to be defined.

This letter is prepared based on observations and review of the material available as of this date. The conclusions and recommendations contained herein represent our professional opinions. These opinions were arrived at in accordance with accepted engineering practices at this time and location. We reserve the right to revise or delete any opinions based on the availability of additional data.

The services performed by Encompass, Inc. were conducted in a manner consistent with the level of skill and care ordinarily exercised by members of the profession that are currently practicing in this area and under similar fee, scope, and schedule requirements.

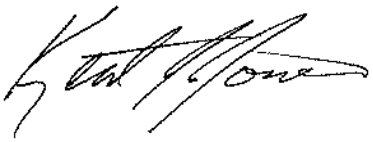
No other warranty is implied or intended. Should you have any questions, please call.

Respectfully submitted,

ENCOMPASS, INC.

Michael K. McIntire, PE
Associate Principal

Reviewed by:



Kent Jones, PE
Principal

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Principal

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ROCHESTER
COMMUNITY
DEVELOPMENT

City of Rochester, Minnesota
4001 W River Parkway NW,
Suite 100
Rochester, MN 55901-7090

Phone: 507-328-2600
Fax: 507-328-2401
Email: CommunityDevelopment@rochestermn.gov

June 6, 2023

Rochester Towers Condominium
207 5th Ave SW
Rochester, MN 55902

RE: VIOLATION NOTICE

c/o Shaun Zavadsky
First Service Residential
8100 Old Cedar Ave S, Suite 300
Bloomington, MN 55425

Mr. Zavadsky,

Minnesota Rule 1300.0225 requires that all buildings shall be maintained in a safe and sanitary condition and that all devices and safeguards required by the code be maintained in conformance with the code under which they are installed. The owner or the owner's designated agent shall be responsible for the maintenance. Buildings that are not maintained in accordance with this rule may be deemed an Unsafe Building pursuant to Minnesota Rule 1300.0180.

On Friday June 2nd, 2023 at approximately 4:45 PM, Community Development staff were notified that the management company had ordered the evacuation of the building as a precautionary measure due to structural concerns exposed during a recent sealant maintenance project. Community Development staff went to the site and were shown the concerns. A follow-up inspection, as authorized under MN Rule 1300.0225, was conducted on June 5th, 2023 and the following required safeguards were noted as damaged, removed or in a state of non-repair:

- Deteriorated columns with reinforcing exposed.
- Deteriorated reinforcing ties and vertical reinforcement.
- There were several other columns that were marked after inspection as potential problem areas. As those areas are analyzed further corrective action may be needed.

Based upon these findings the building is hereby deemed an Unsafe Building per MN Rule

ROCHESTER
COMMUNITY
DEVELOPMENT

City of Rochester, Minnesota
4001 W River Parkway NW,
Suite 100
Rochester, MN 55901-7090

Phone: 507-328-2600
Fax: 507-328-2401
Email: CommunityDevelopment@rochestermn.gov

1300.0180. We appreciate the proactive evacuation of the building prior to this order, as continued use is deemed dangerous to the safety of the occupants. All noted items must be abated by repair, rehabilitation, demolition or removal according to Minnesota Statutes, Sections 463.15 to 463.26. Repairs are to be completed and approved prior to occupancy being permitted. Please feel free to reach out with any additional questions or concerns you may have regarding this matter.

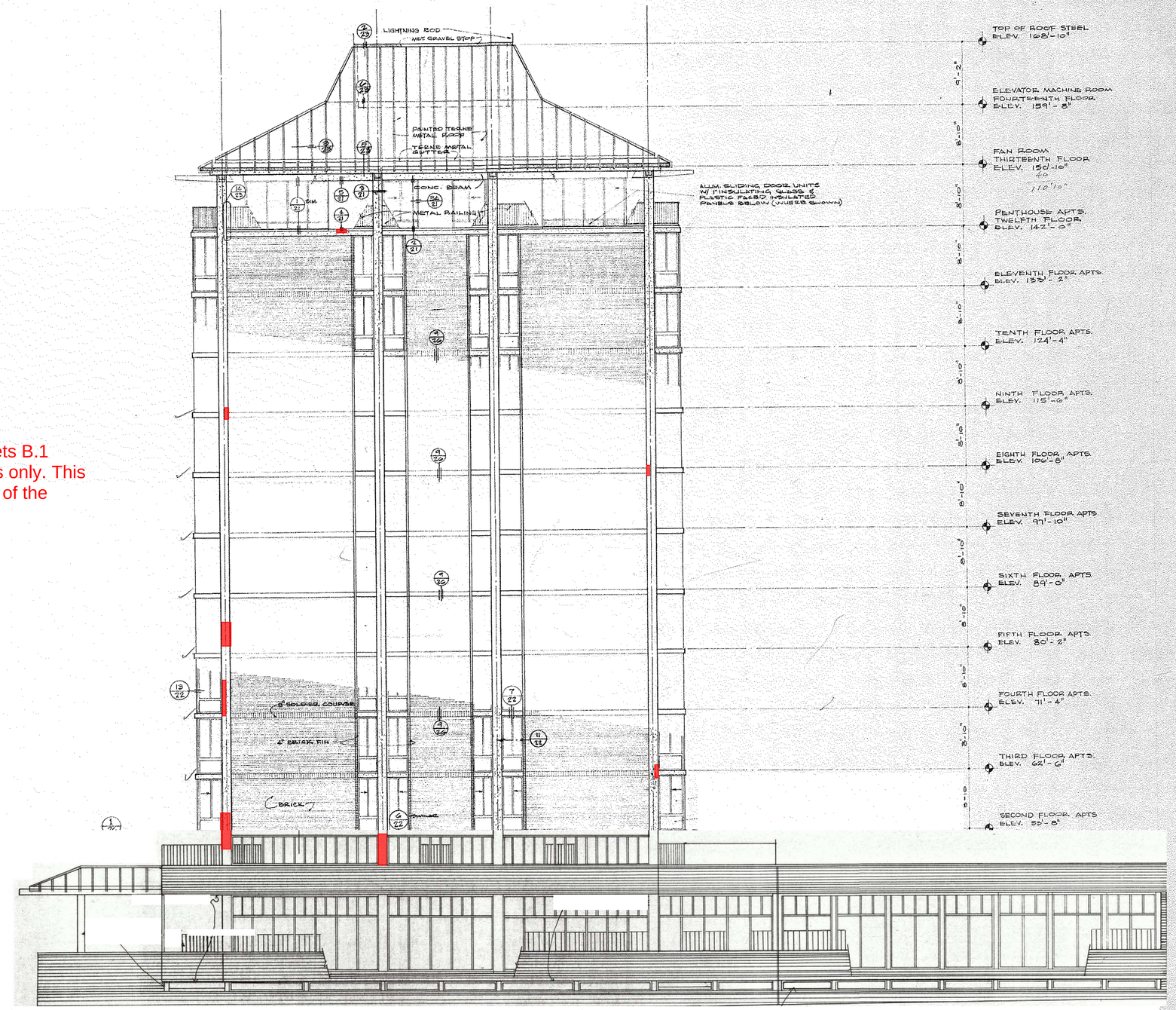
Sincerely,

Jerry Norman
Manager Plan Review/Building Official – City of Rochester
507-328-2622
gnorman@rochestermn.gov

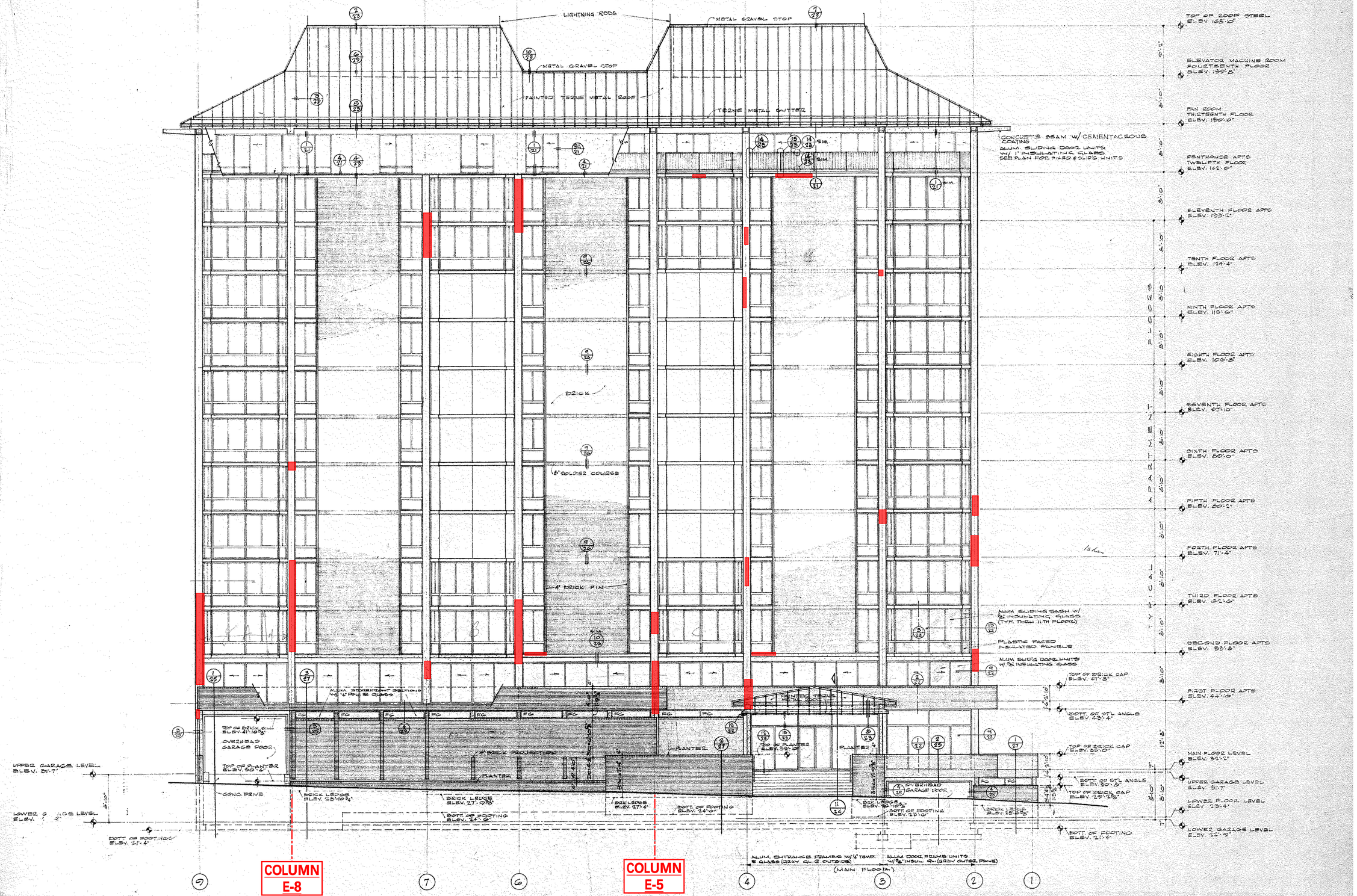
CC: Michael Spindler-Krage – Rochester City Attorney's Office
Brent Carlson- Rochester City Attorney's Office
James Bradley- Community Action Team, Rochester Police Department
Ryan Yetzer – Deputy Director Community Development

Red Areas = Suspected Concrete Damage

Note: Diagrammatic representation on sheets B.1 through B.4 provides general spall locations only. This diagram is not to scale and is not indicative of the spall severity at each location.



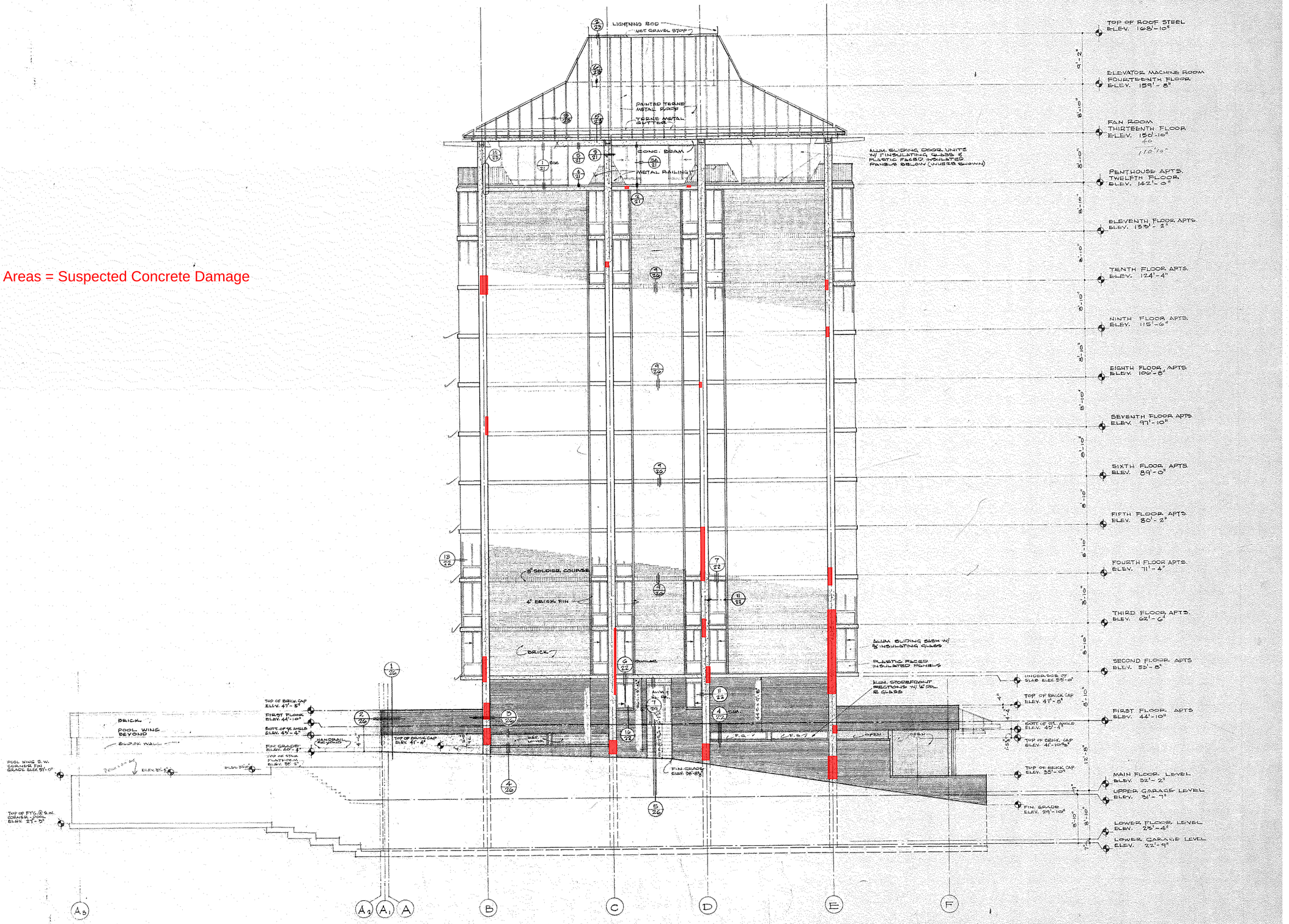
NORTH ELEVATION



Red Areas = Suspected Concrete Damage

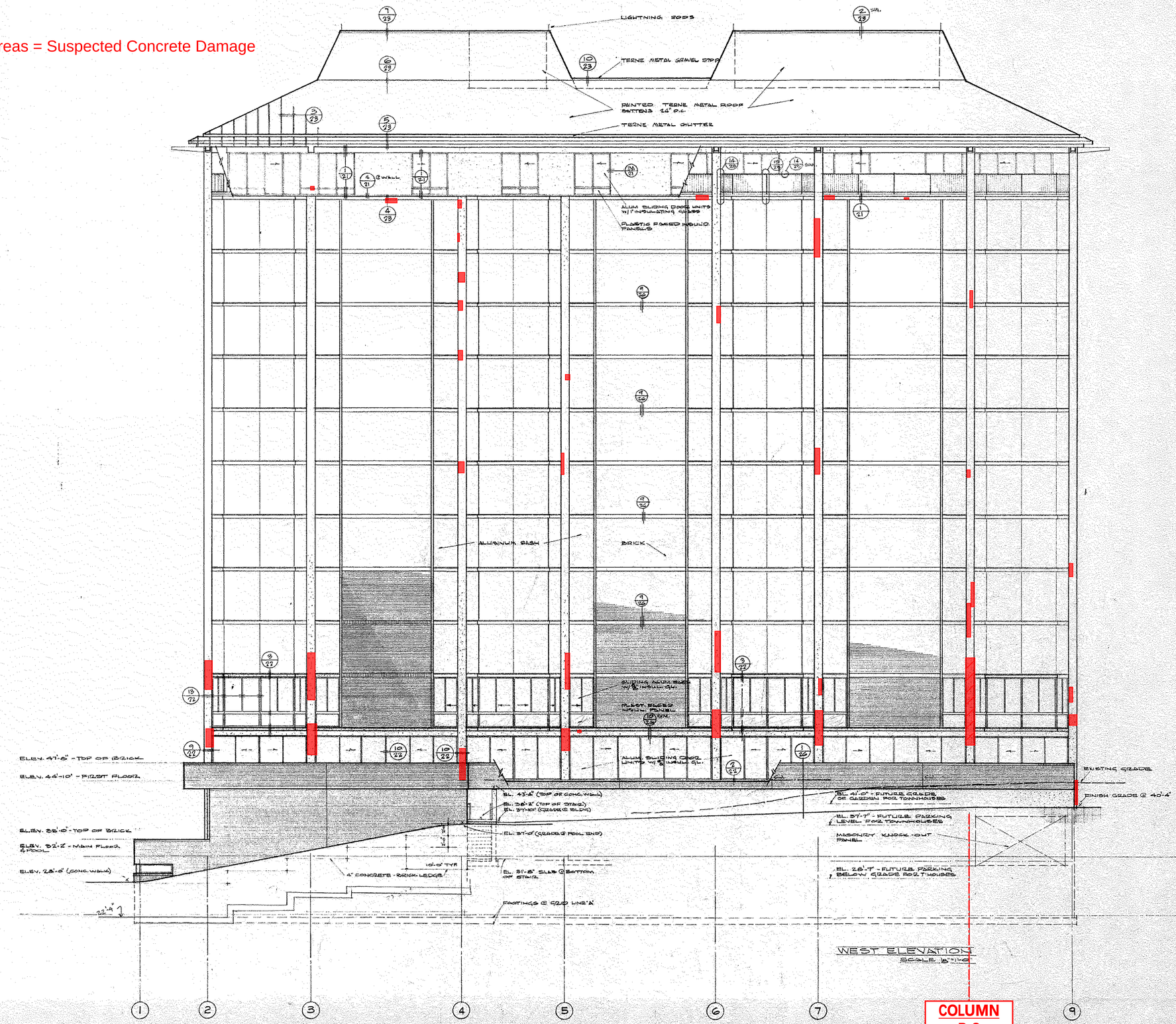
EAST ELEVATION

Red Areas = Suspected Concrete Damage



SOUTH ELEVATION

Red Areas = Suspected Concrete Damage

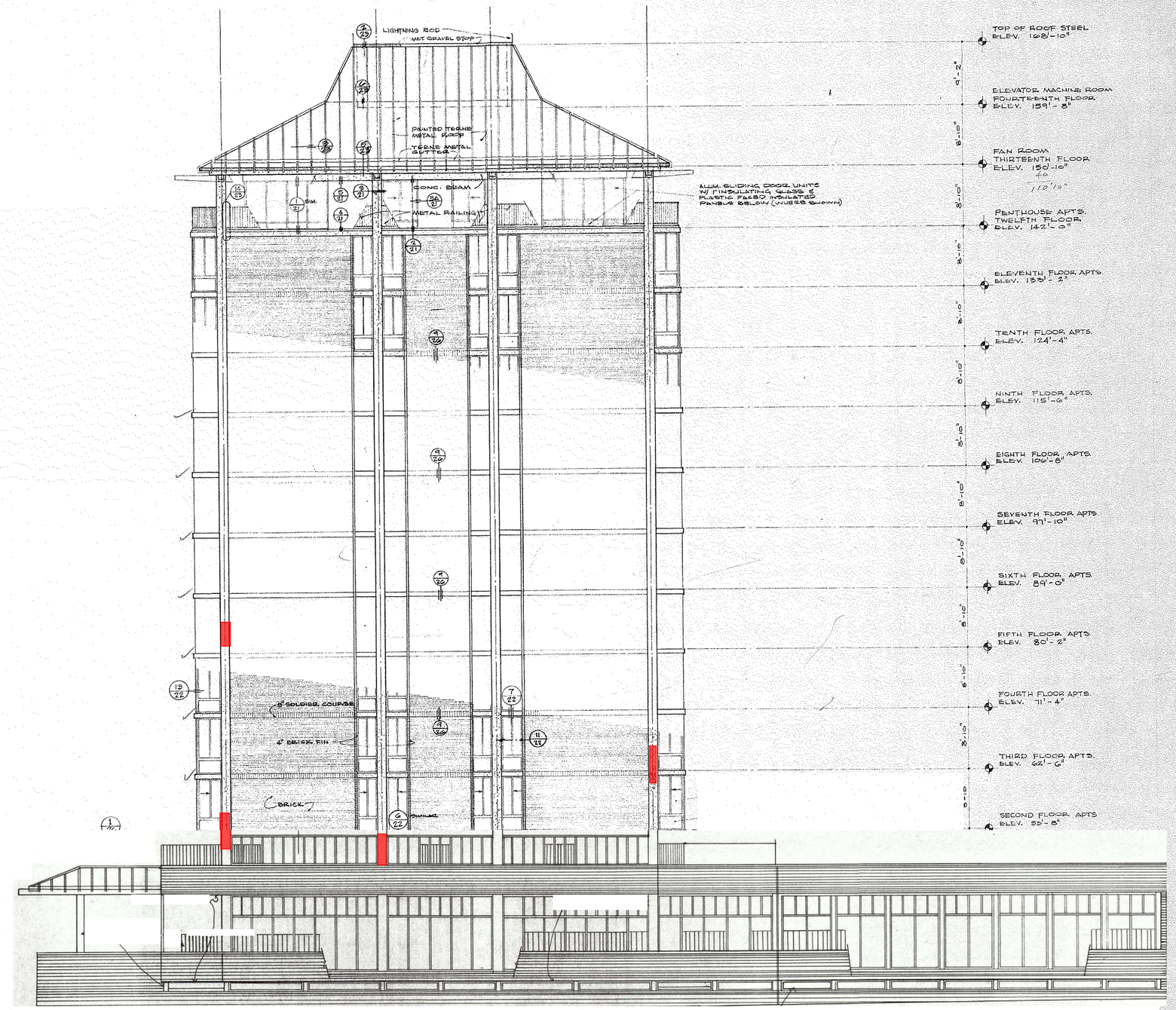


WEST ELEVATION
SCALE: 1/8"=1'-0"

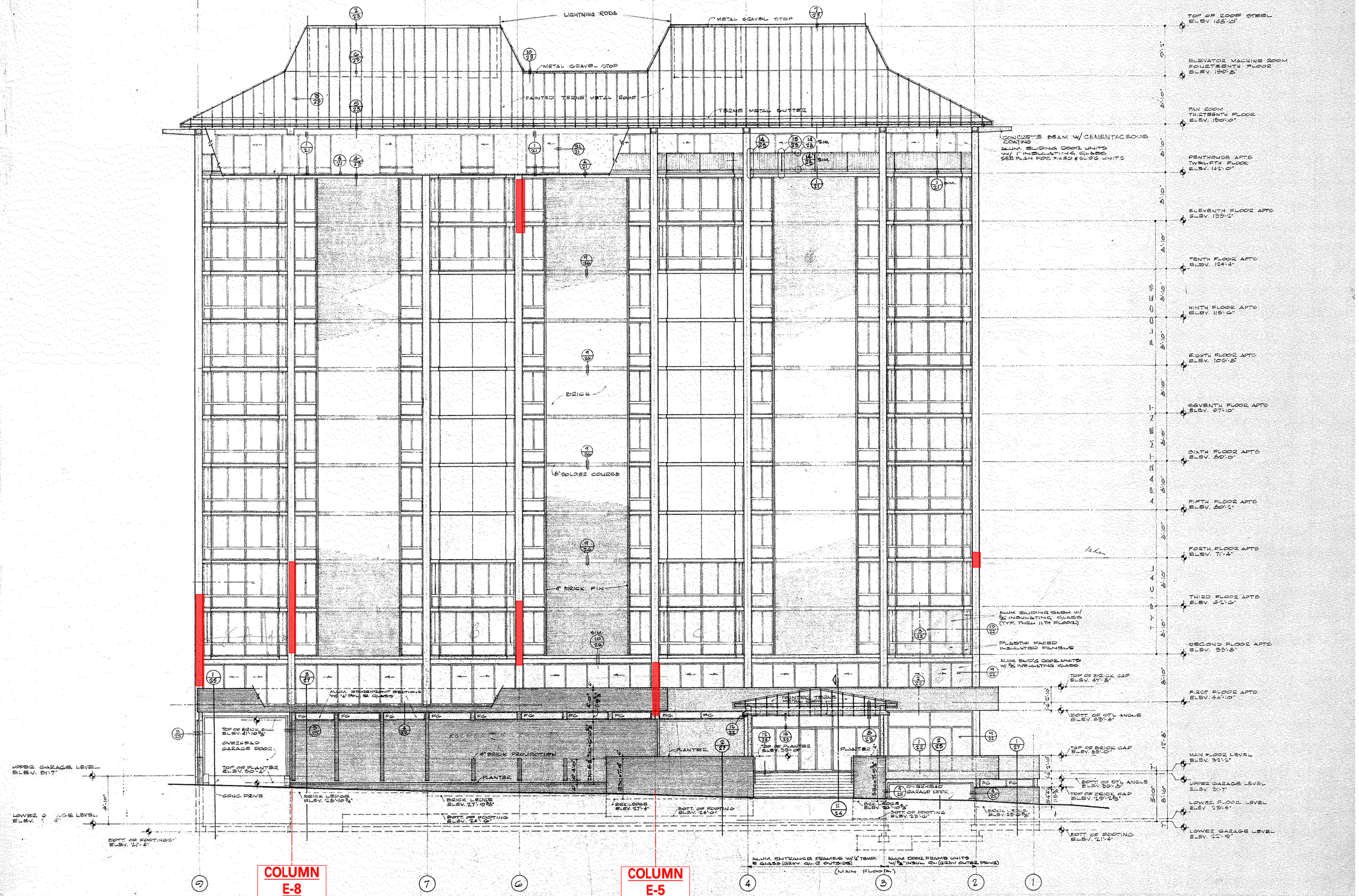
COLUMN B-8

WEST ELEVATION

Red squares = areas of GPR scanning



NORTH ELEVATION



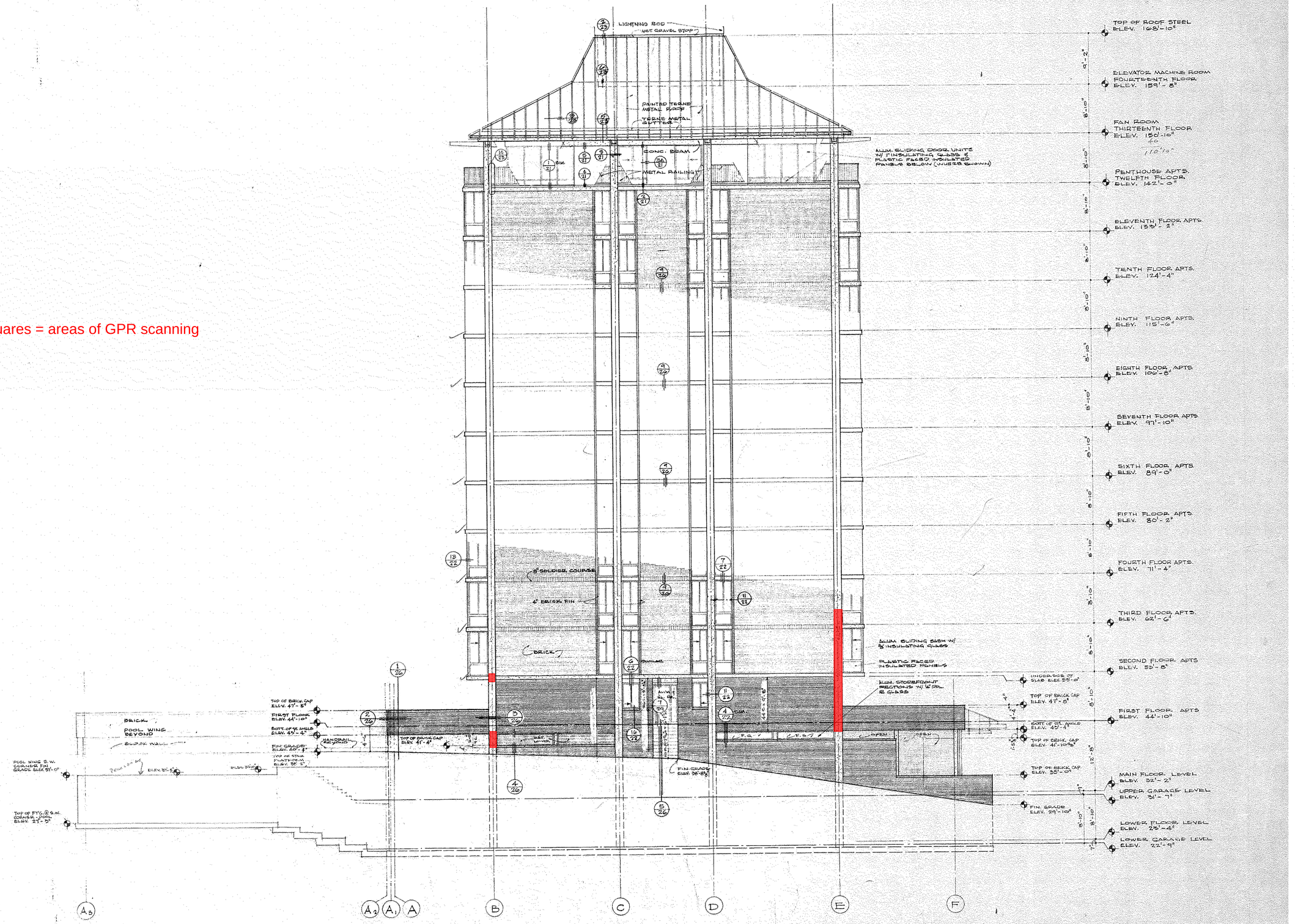
COLUMN E-8

COLUMN E-5

Red squares = areas of GPR scanning

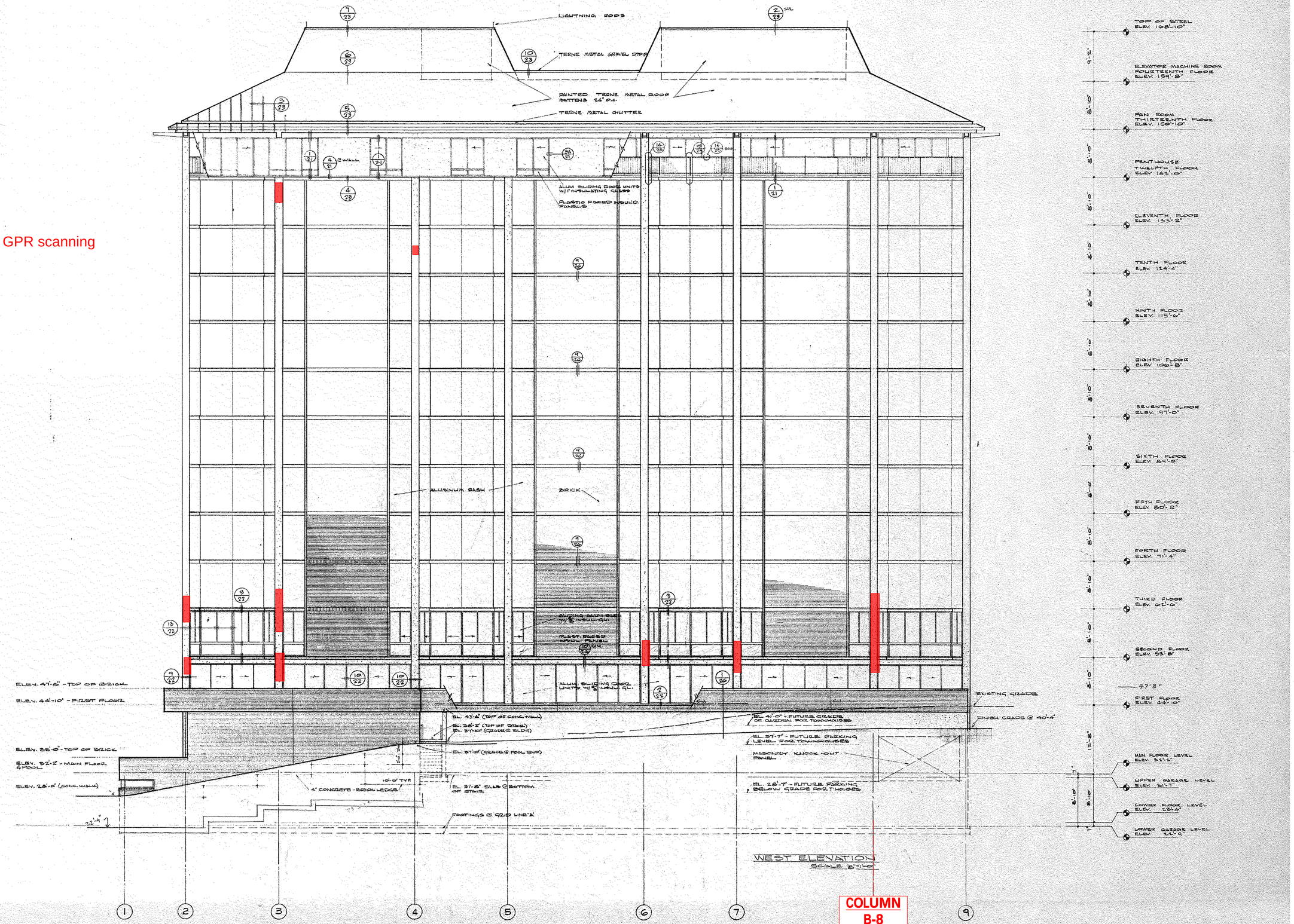
EAST ELEVATION

Red squares = areas of GPR scanning



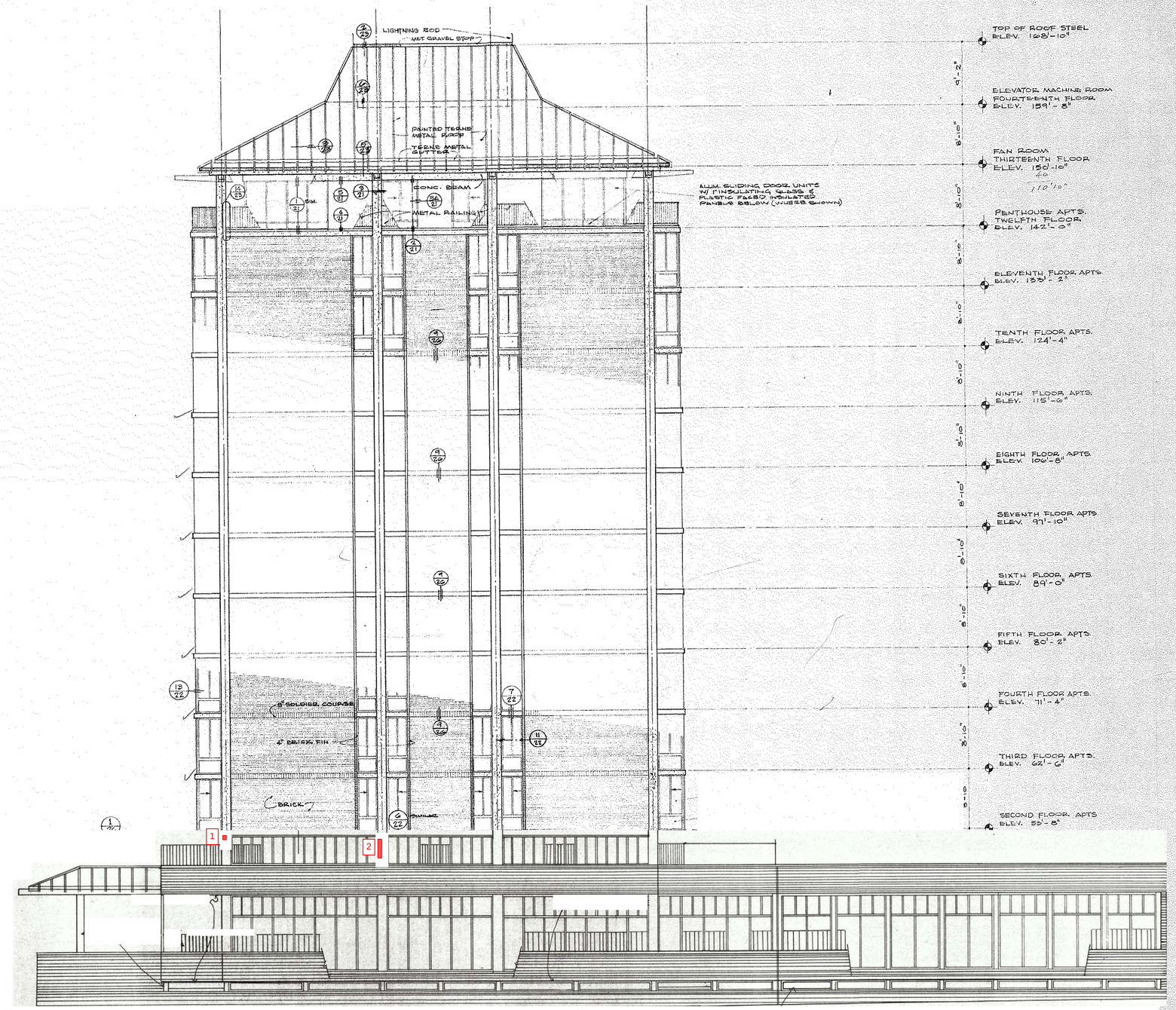
SOUTH ELEVATION

Red squares = areas of GPR scanning



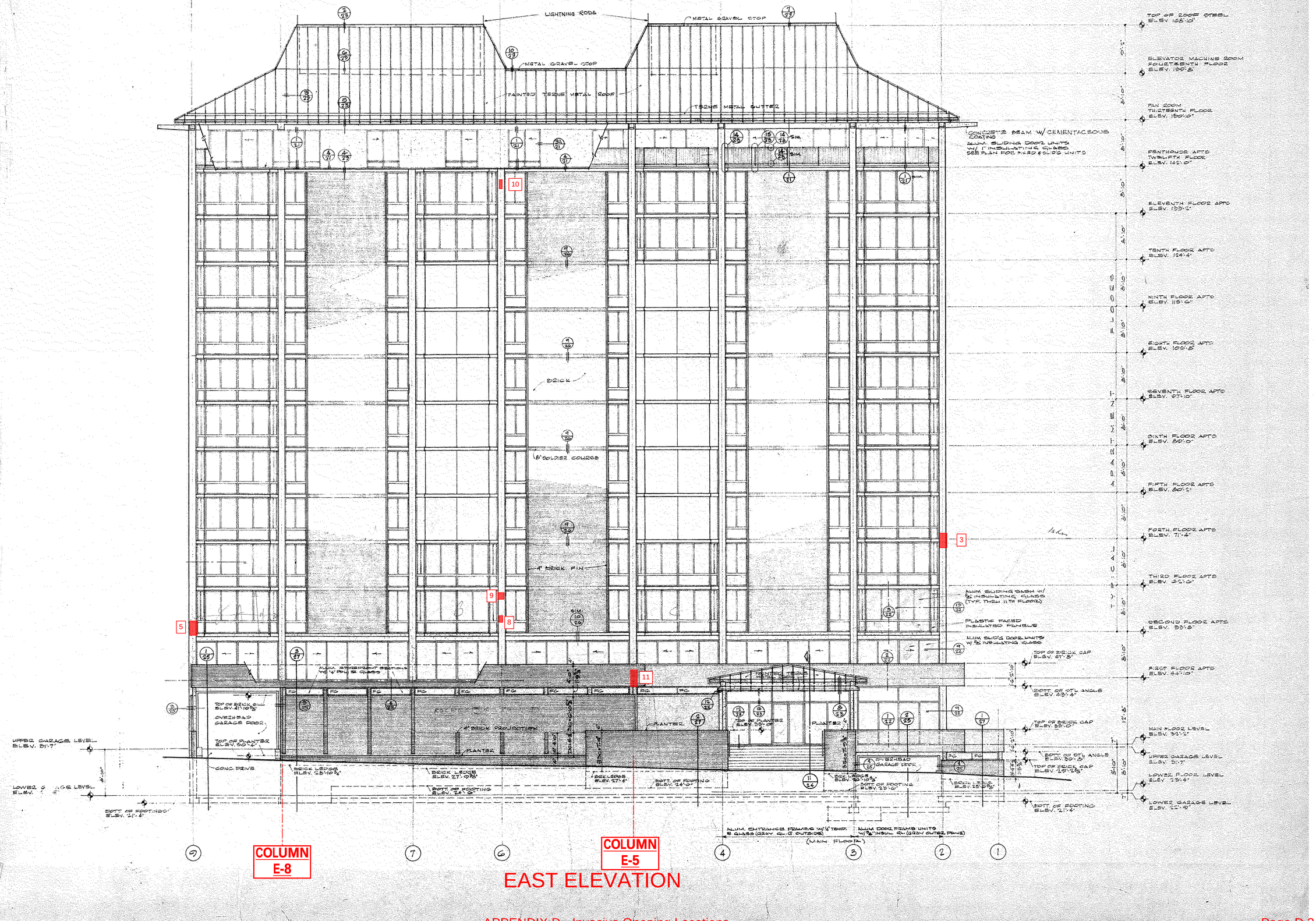
COLUMN B-8

WEST ELEVATION

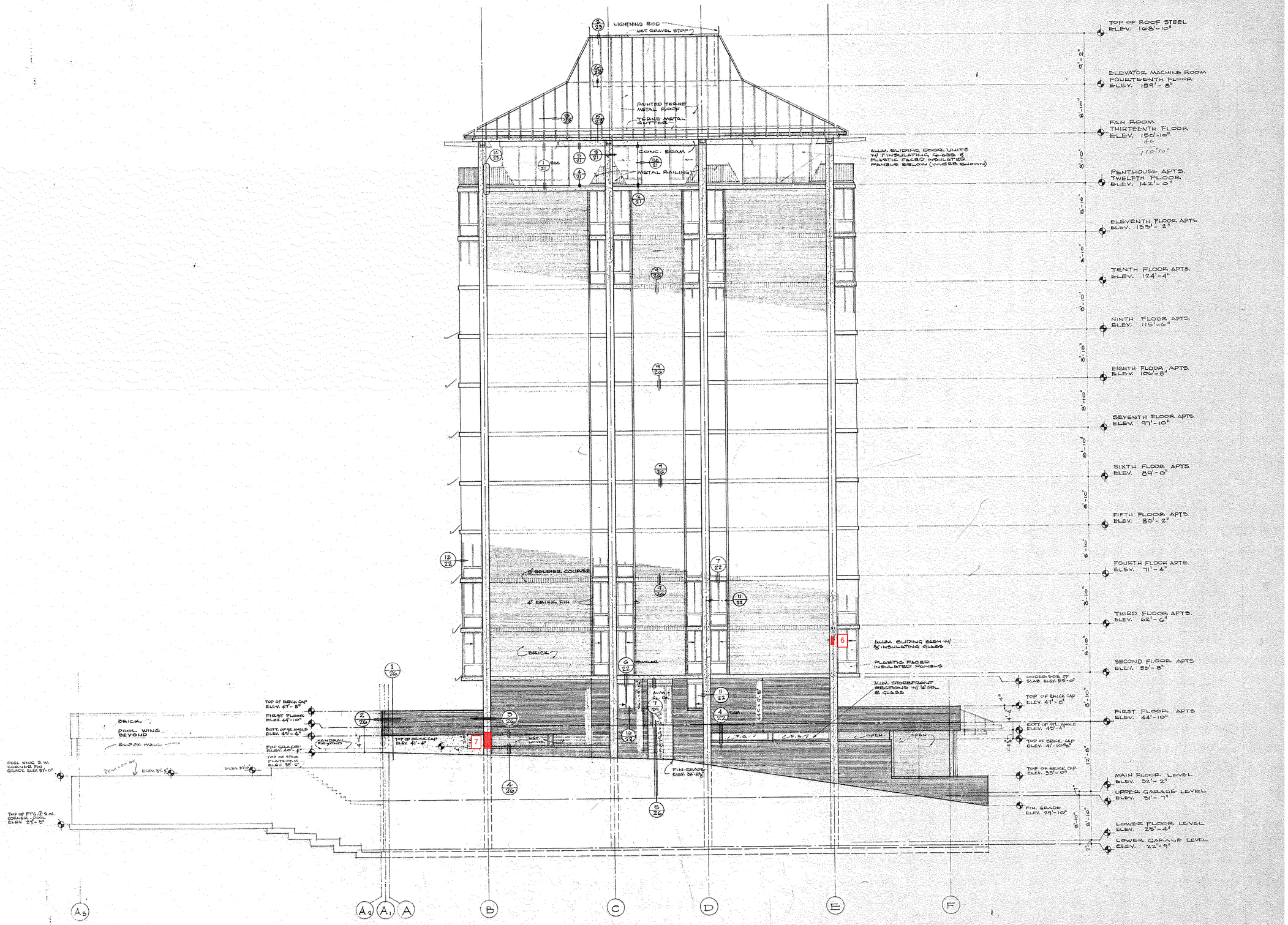


A3 A2 A1 A B C D E F

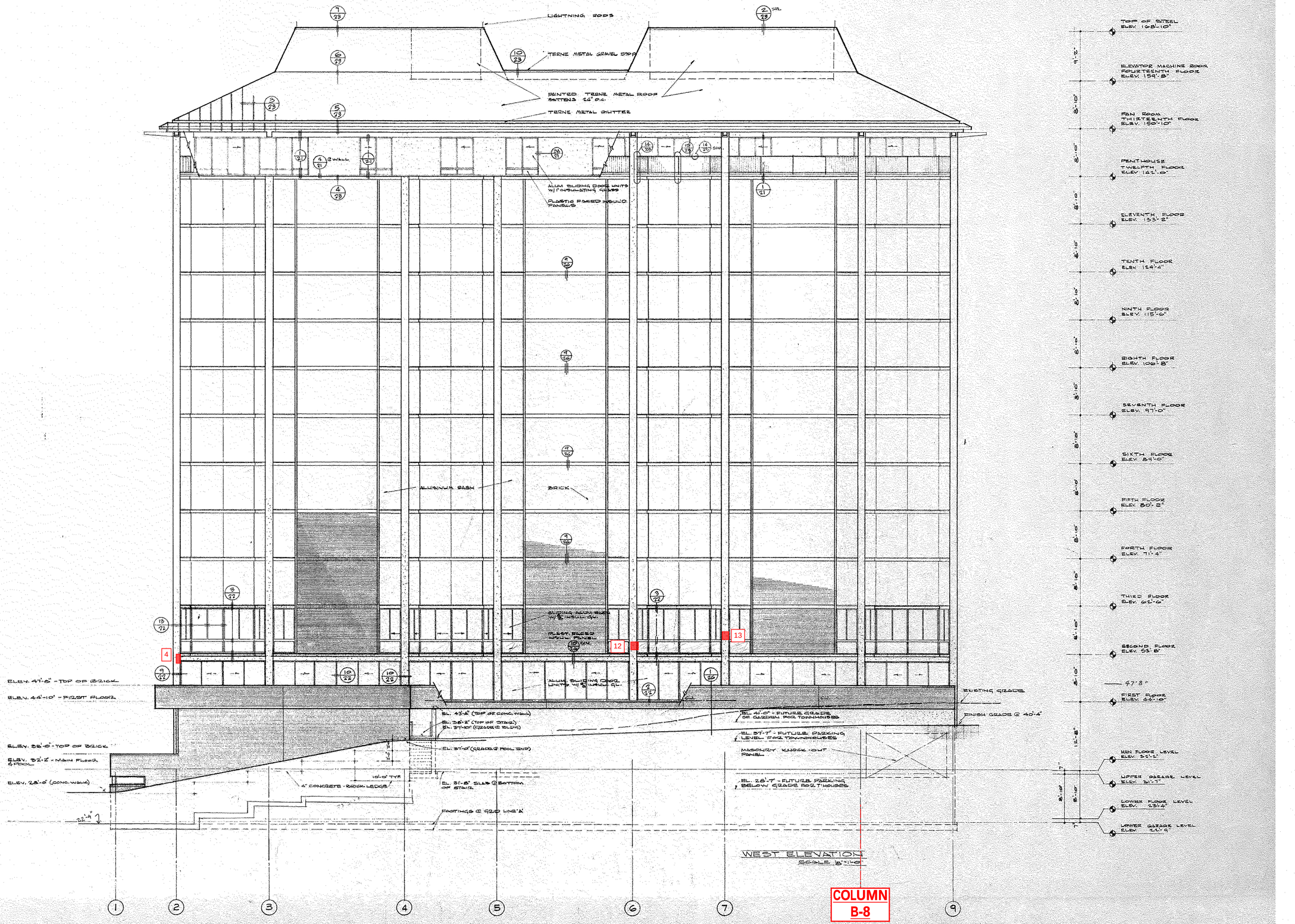
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION
SCALE: 1/8"=1'-0"

COLUMN B-8

WEST ELEVATION

REPORT OF ULTRASONIC TESTING

Project:
Rochester Towers Condominium
207 5th Avenue Southwest
Rochester, MN 55902

AET Project No. P-0023914

Reported To:
First Service Residential
c/o Rochester Towers Condominium
8100 Old Cedar Avenue South
Bloomington, MN 55425
Attn: Maggie Mahmood
CC: Kenneth Beadle / Encompass, Inc.
Date: June 16, 2023

INTRODUCTION

American Engineering Testing (AET) is pleased to submit this report summarizing our findings at the above referenced project. We performed the following scope of services in accordance with our change order dated June 12, 2023:

1. Performed ultrasonic testing on existing cast-in-place concrete columns using MIRA tomography equipment to sound for internal defects at locations selected by Encompass.
2. Prepared a report summarizing our findings. This report includes photos and MIRA scans obtained while on-site.

BACKGROUND INFORMATION

AET understands that sections of the exposed cast-in-place columns around the building perimeter have spalled or delaminated prompting the evacuation of residents in the building. AET was requested to perform ultrasound testing on the concrete to try and document whether affected concrete was observed further into the column from the rebar cage.

The building is approximately twelve (12) stories tall and has exposed cast-in-place perimeter columns with cross-sections of 16” x 16”.

TEST PROCEDURES

AET utilized MIRA tomography to perform ultrasonic testing on the concrete surface of the cast-in-place columns. The equipment consists of an array of thirty-two (32) ceramic tipped

transducers working in tandem with one another to transmit and receive multiple pulse echo waves. Once the transduced pulse echoes encounter an embedded anomaly such as extensive honeycombing or delaminated concrete, they are reflected back to the receivers and a two-dimensional image of the internal anomalies are shown on the tablet connected to the tomography equipment. The effectiveness of the tomography equipment can depend on the amount of reinforcement present, sometimes showing false readings deeper into the column as well as the thickness of the concrete. Shallow concrete thickness can affect how deep the transducers communicate with one another. Additionally, surface obstructions such as rigid foam insulation can also affect test accuracy.

TEST RESULTS

We visited the project site on June 14, 2023 to perform our scope of services. Testing on the columns on floor 2 was limited to the interior face of the columns where Encompass observed delaminated concrete on the exterior faces via hammer sounding. Testing on the columns between the mezzanine and first floor were performed on the exterior faces. The following is a summary of our findings:

Floor 2 – Grid B/8:

This column was observed to have the most severe damage where concrete was observed to have been removed from within the rebar cage (Figure 1).

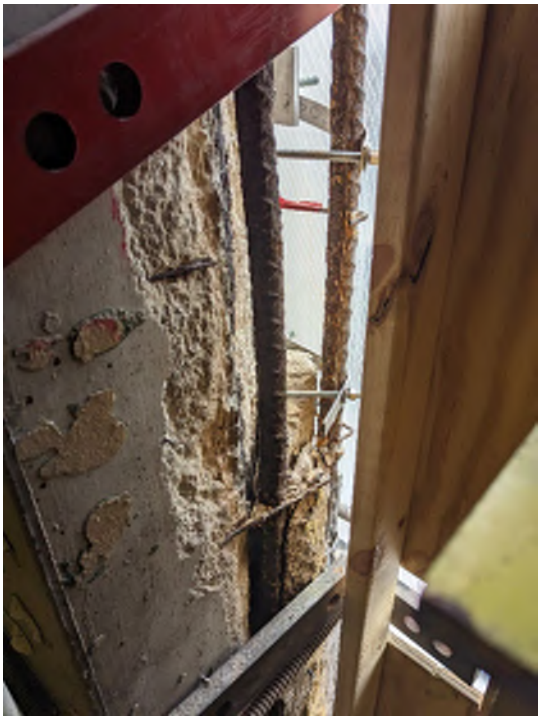


Figure 1: Damaged concrete within column rebar cage.

AET observed an isolated area approximately 1-1/2’ to 3’ up from the column base where an anomaly was observed approximately 8” inward at the center of the column (Figures 2 and 3). The remaining concrete appeared sound.

Figure 2: The red region where the internal anomaly was observed.

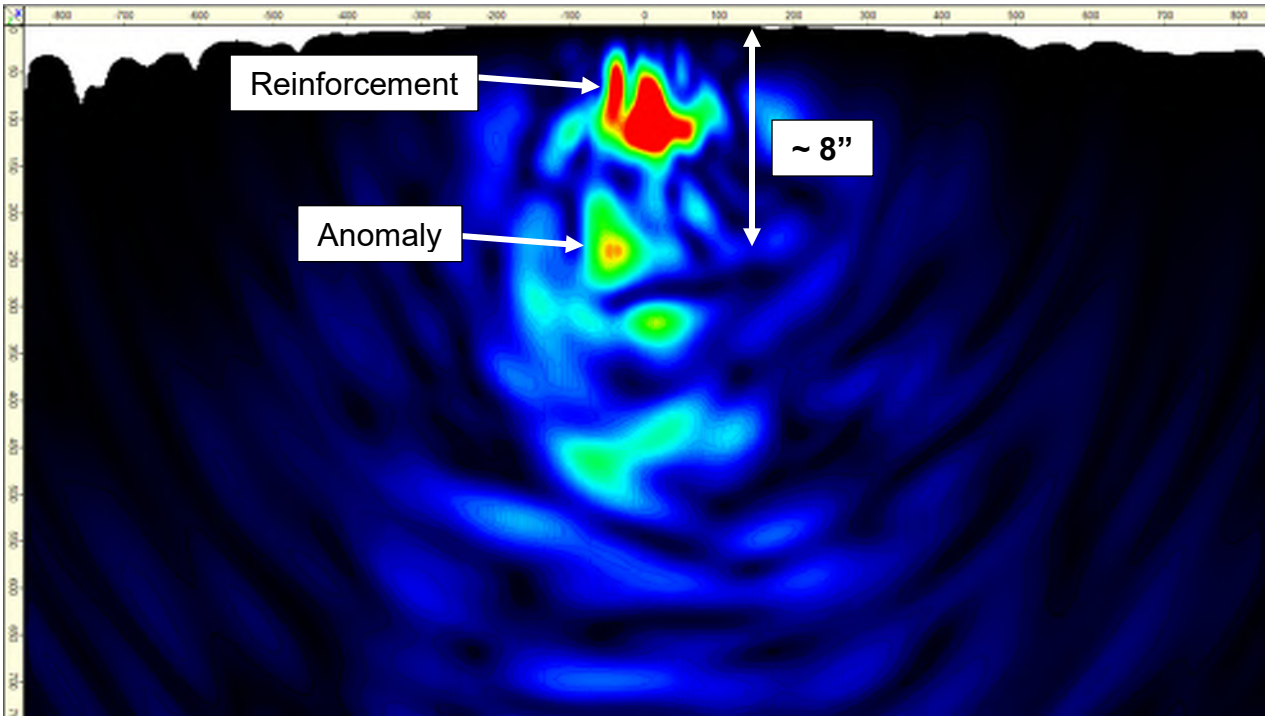


Figure 3: MIRA data of anomaly

Floor 2 – Grid E/8 and E/9 Columns:

Encompass observed delaminations on the exterior faces. The MIRA equipment did not observe anomalies within the concrete column at these locations. The affected concrete appears to be limited to the region of concrete outside the rebar cage (Figure 4).

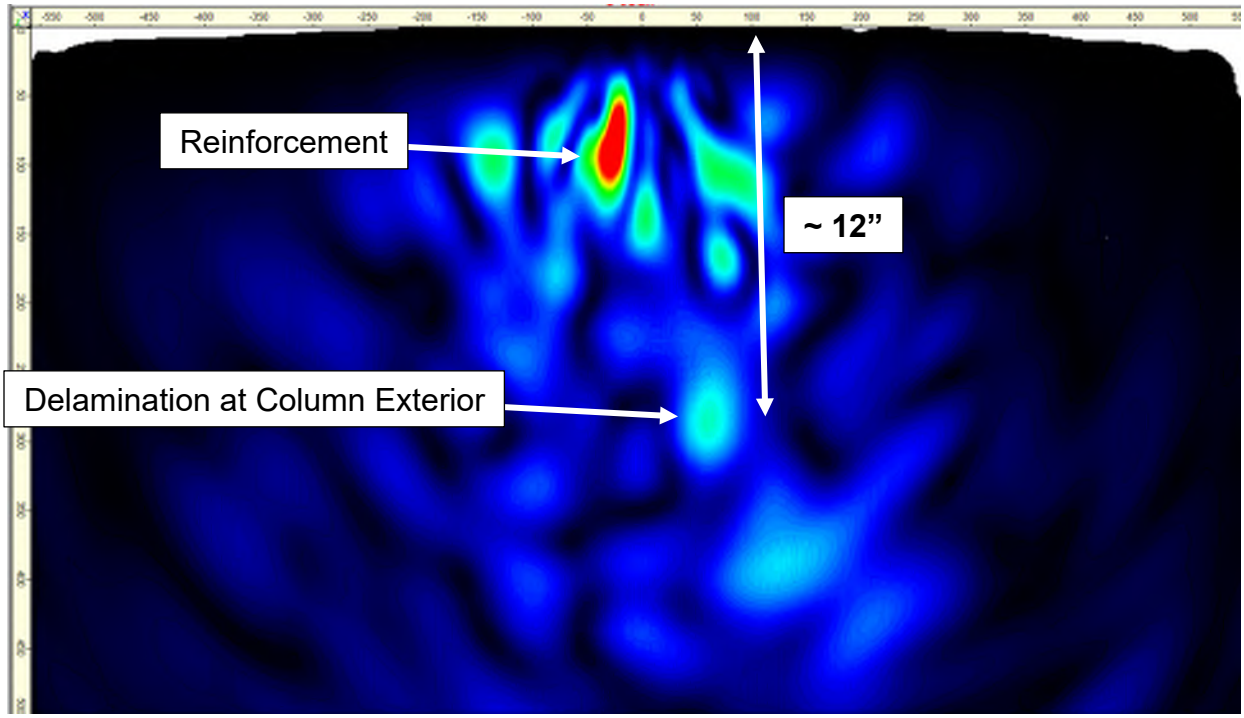


Figure 4: MIRA data from E/8 column

Floor 1 – Grid E/5 Column:

We collected MIRA data at the north, south and east faces of the columns at this location where delaminations were observed by Encompass. The concrete thicknesses at these locations were observed to range from 3” to 4” suggesting the delamination is outside the rebar cage within the column (Figures 5 and 6):

Figure 5: Delaminated region

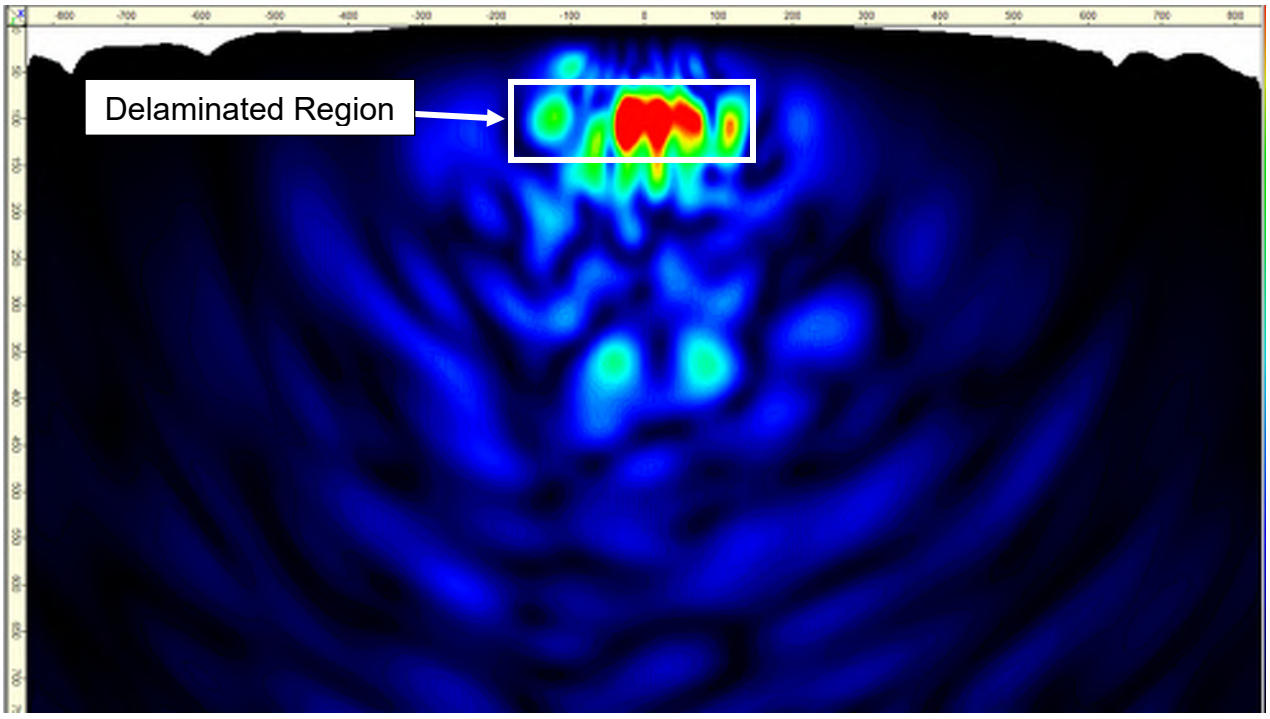


Figure 6: MIRA data from E/5 Column

Floor 1 – Grid D/2 Column:

The delamination at this region appeared to be shallow or within 1" of the concrete surface (Figure 7). The MIRA equipment was not able to transmit a signal beyond the delamination / sound concrete interface.

Figure 7: The delaminated concrete at this location appeared to be less than 1" thick.

Floor 11 – Grid E/6 Column:

The delamination observed on the exterior face of the column appeared to be limited to the exterior surface (Figure 8).

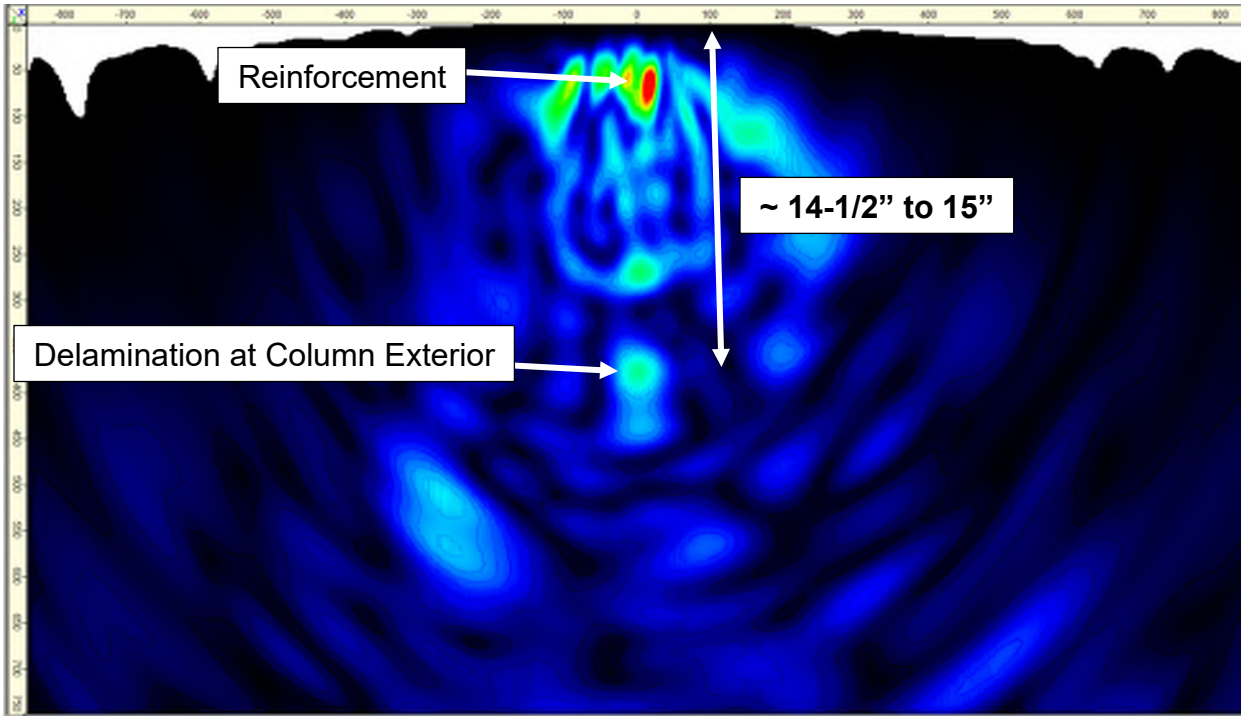


Figure 8: The delamination on the exterior face of the wall appeared to be approximately 1" thick.

Floor 1 – Grid B and Floor M – Line 2 Spot Checks:

We collected individual MIRA scans on the exterior faces of the columns at these locations. We did not observe unsound concrete with the MIRA equipment at these locations. The backside of the concrete columns were clearly visible at each of the locations tested (Figure 9).

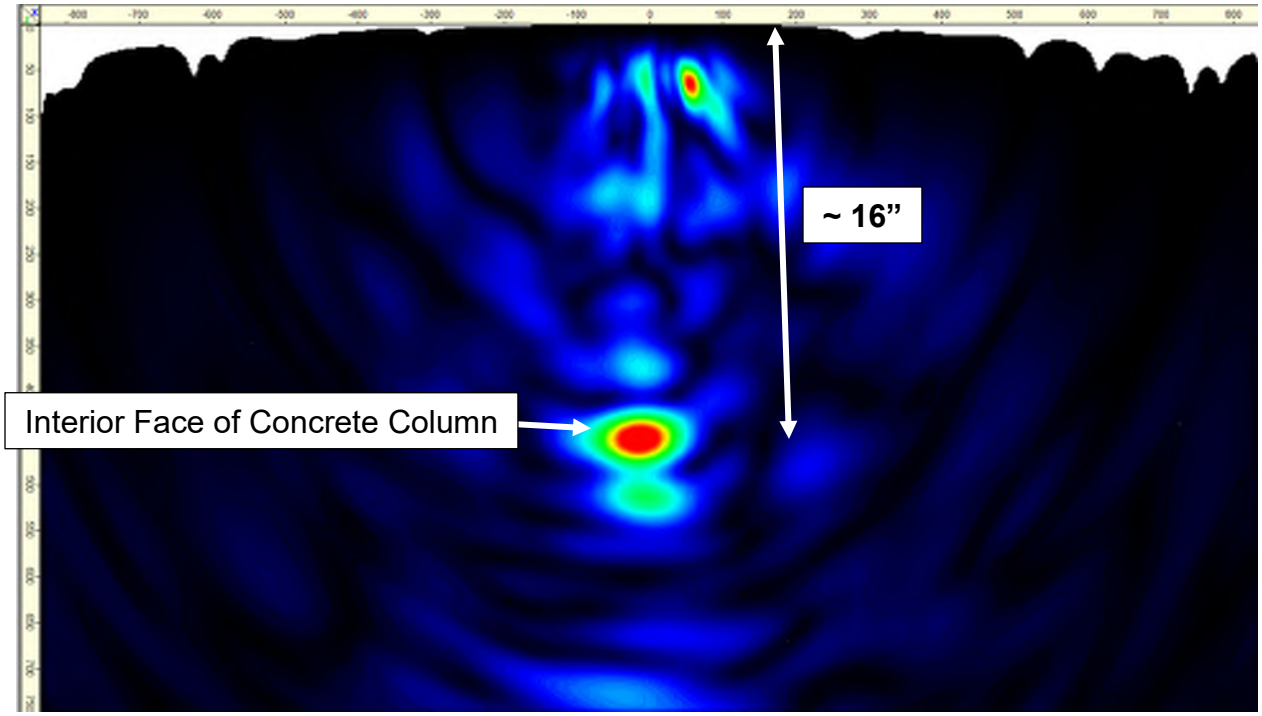


Figure 9: The backside of the concrete columns were visible. We did not observe anomalies within the columns at these locations.

LIMITATIONS

Our authorized work scope was limited to our observations in the requested areas only. As such, our conclusions and recommendations pertain only to those areas observed. Should conditions differing from those documented by AET at the time our work be found in the future, AET reserves the right to review our conclusions and recommendations and modify them accordingly.

STANDARD OF CARE

The work performed by American Engineering Testing, Inc., has been conducted in a manner consistent with that level of skill and care ordinarily exercised by other members of the profession currently practicing in this area.

REMARKS

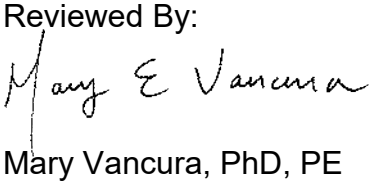
We appreciate the opportunity to assist you on this project. If you have any questions regarding this report or our services, feel free to contact us.

Sincerely,

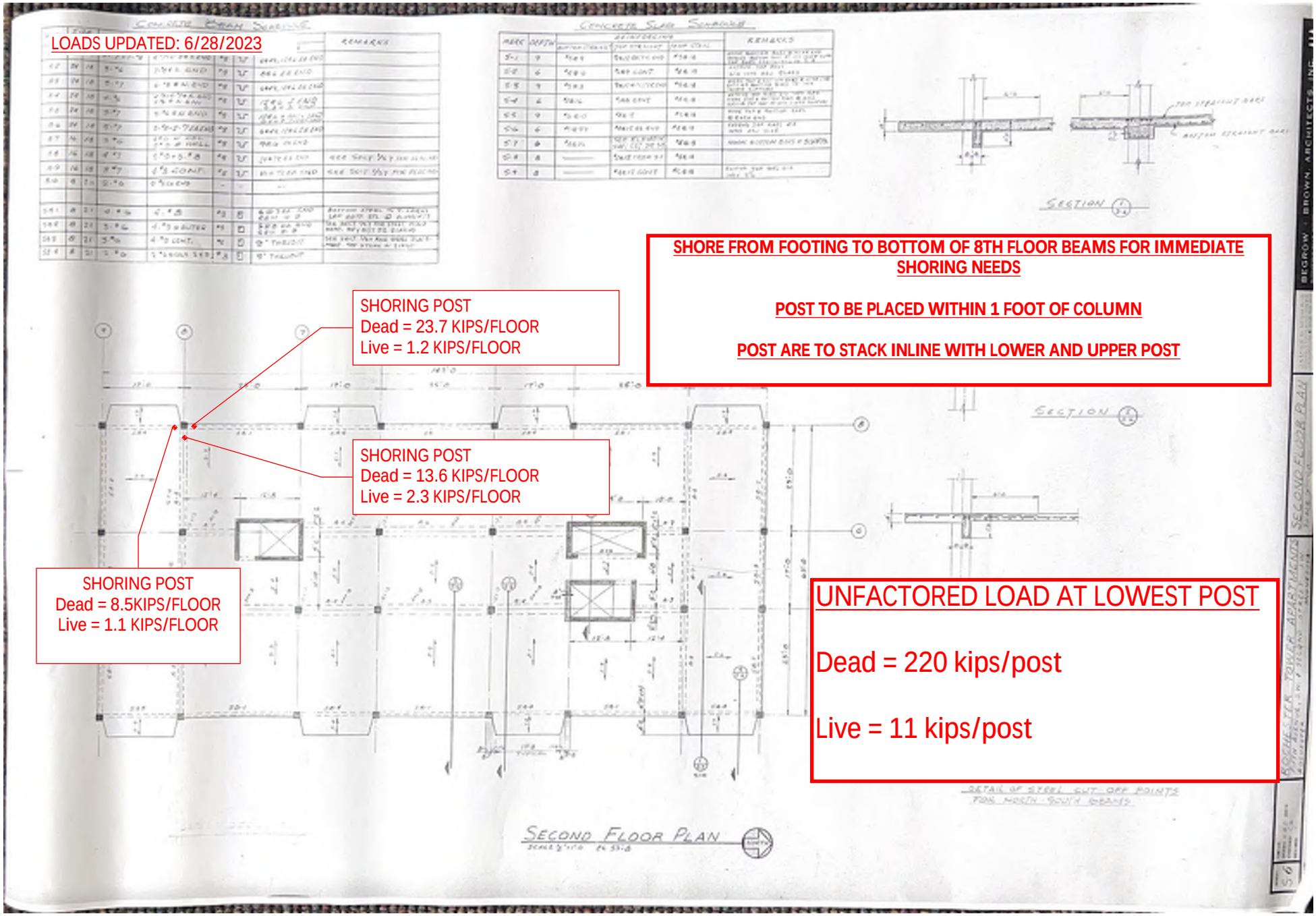
American Engineering Testing, Inc.

Brandon Mikelson
Engineer II - Building Performance, Forensics and Testing
E-mail: bmikelson@teamAET.com
Phone: 651.659.1331

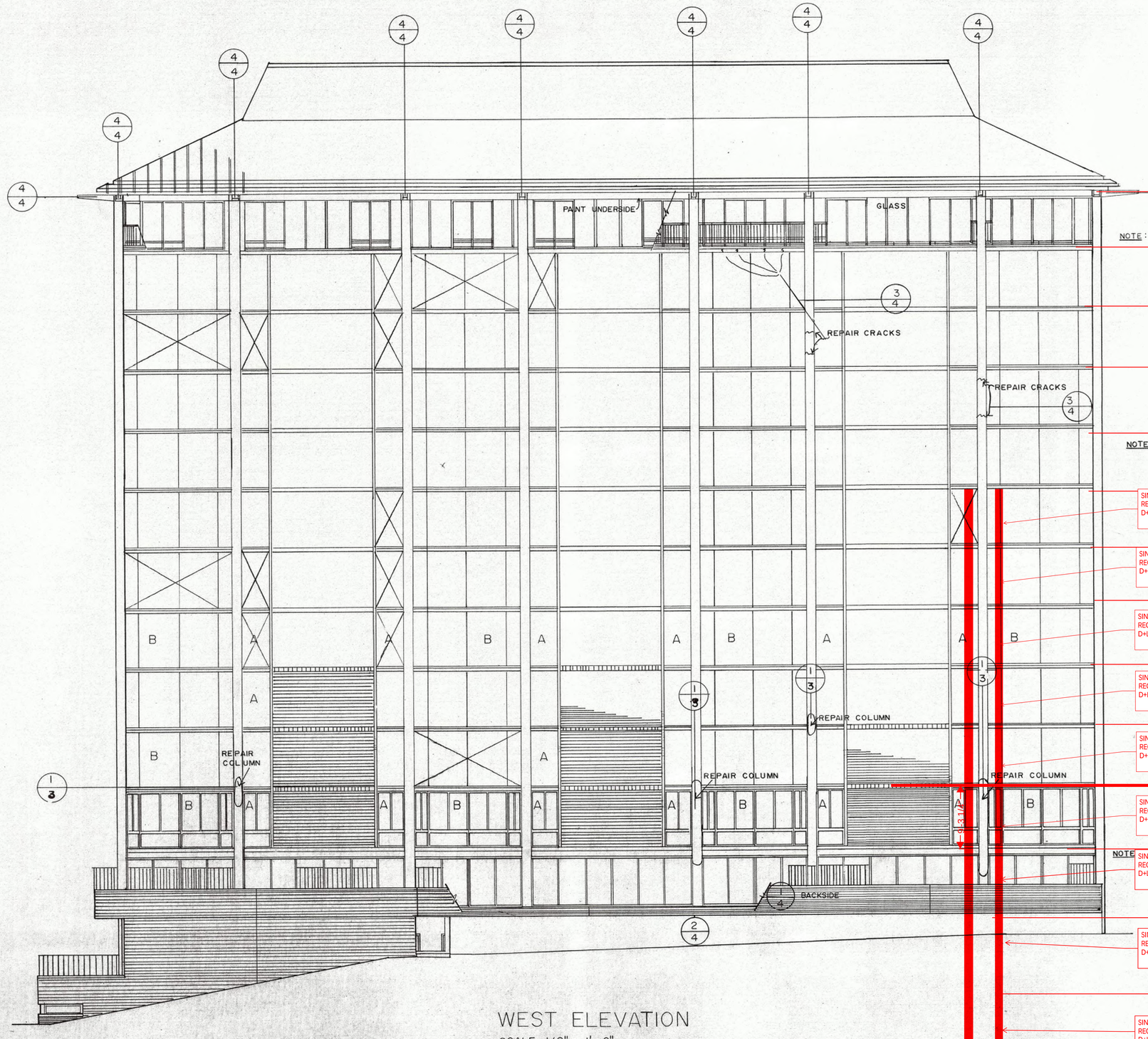
Reviewed By:



Mary Vancura, PhD, PE
Principal Engineer - Building Performance, Forensics and Testing
Email: mvancura@teamAET.com
Phone: 612.356.0190


LOADS UPDATED: 6/28/2023
SHORE FROM FOOTING TO BOTTOM OF 8TH FLOOR BEAMS FOR IMMEDIATE SHORING NEEDS
POST TO BE PLACED WITHIN 1 FOOT OF COLUMN
POST ARE TO STACK INLINE WITH LOWER AND UPPER POST
SHORING POST
Dead = 23.7 KIPS/FLOOR
Live = 1.2 KIPS/FLOOR
SHORING POST
Dead = 13.6 KIPS/FLOOR
Live = 2.3 KIPS/FLOOR
SHORING POST
Dead = 8.5KIPS/FLOOR
Live = 1.1 KIPS/FLOOR
UNFACTORED LOAD AT LOWEST POST
Dead = 220 kips/post
Live = 11 kips/post
SECOND FLOOR PLAN

LOADS UPDATED: 6/28/2023



WEST ELEVATION
SCALE 1/8" = 1'-0"

NOTE: PAINT RAILS AND WINDOWS ON 12 TH FLOOR
WROUGHT IRON IS BEHIND WINDOWS

NOTE: PAINT ALL A & B WINDOWS
PAINT ALL CONCRETE COLUMNS AND WALLS AND WHERE NOTED
PAINT ALL SHELVE ANGLES

8th floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 26 KIPS

7th floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 51 KIPS

6th floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 77 KIPS

5th floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 103 KIPS

4th floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 128 KIPS

3rd floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 154 KIPS

2nd floor
NOTE SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 180 KIPS
IRON
WINDOWS ON 1 ST FLOOR

1ST floor
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 205 KIPS
SEAL 200 L.F. HORIZ. CRACKS ON BALCONY AS

PARKING 1
SINGLE POST STACK MAX. REQUIRED CAPACITY: D+L = 231 KIPS

PARKING 2/FOUNDATION

APPENDIX F - SHORING LOADS

		Current Condition					
Priority Repair	Location (Unit)	Shoring Posts Installed	External Column Confinement Installed	Window(s) Removed	Heating Coil Removed	Localized Drywall & Framing Removed	Flooring Finishes Partially Removed
Column B-8	Lower Parking Garage*	X			X	X	X
	Main Level Parking Garage*	X			X	X	X
	103*	X			X	X	X
	204*	X	X	X	X	X	X
	304*	X			X	X	X
	404*	X			X	X	X
	504*	X			X	X	X
	604*	X			X	X	X
	704*	X			X	X	X
	804	*			X		N/A
	904	*Final shoring requirements to be determined based on final repair design. Shoring and column stabilization requirements at all floors may vary based on means and methods of construction and final design requirements.					
	1004						
	1104						
	1202						
Column E-8	Lower Parking Garage	X			X		
	Main Level Parking Garage	X			X		
	104	** / ***			X		
	205	** / ***	X	X	X	X	X
	305	** / ***	X	X	X		X
	405	** / ***			X		
	505	** / ***			X		
	605	** / ***			X		
	705	** / ***			X		
	805	** / ***			X		
	905	**Equipment partially staged in home. ***Final shoring requirements to be determined based on final repair design. Shoring and column stabilization requirements at all floors may vary based on means and methods of construction and final design requirements.					
	1005						
	1105						
	1203						
Column E-5	Lower Parking Garage	****Final shoring requirements to be determined based on final repair design. Shoring and column stabilization requirements at all floors may vary based on means and methods of construction and final design requirements.					
	Main Level Parking Garage						
	105						
	106						
	207						
	307						
	407						
	507						
	607						
	707						
	807						
	907						
	1007						
	1107						
	1204						
Main Level Entry Ramp/Slab	Lower Parking Garage	*****Final shoring requirements to be coordinated with repair means and methods.					

SITE VISIT REPORT:

PROJECT:	Rochester Towers Condominium 207 5th Avenue Southwest Rochester, MN 55902	**DATE:**	June 20, 2023
COPIES:		**AET PROJECT NO:**	P-0023914
ON-SITE CONTACTS:		**REPORT NO:**	2
		TIME:	11:00a – 12:00p
		WEATHER:	Indoors
		AET PERSONNEL:	Chris Zeller

SCOPE OF WORK:

Performed Windsor probe testing in general accordance with ASTM C803. We performed testing at three (3) locations as directed by Encompass.

DISCUSSION:

AET utilized a James Instruments Windsor Probe System to perform testing. One (1) to three (3) probes were fired into the concrete at each test location. We measured the exposed depth of penetration of each probe as well as determine the Moh's Hardness of exposed aggregate at the test location. These values were used to determine estimated concrete compressive strength.

OBSERVATIONS:

Room 204 (1 test):

- Exposed probe length: 2.550 in.
- Moh's 4
- Estimated compressive strength: 5,000 psi

Room 205 (3 tests):

- Moh's 5
- Exposed probe lengths: 2.500 in., 2.100 in., and 2.150 in.
- Estimated compressive strength: 9,400 psi, 6,700 psi, and 7,075 psi

Upper-Level Garage (3 tests):

- Moh's 7
- Exposed probe lengths: 2.150 in., 2.075 in., and 2.100 in.
- Estimated compressive strength: 6,050 psi, 5,400 psi, and 5,625 psi